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*Account of Arakan.** BY LIEUT. PHAYRE, *Senior Assistant Commissioner, Arakan.*

Arakan Proper, called by the natives *Ra-khoing-pyee*, or *Ra-khoing* country, lies between 20° and $21^{\circ} 10'$ N. Lat. on the sea coast; in the interior it extends to about $21^{\circ} 40'$. It is bounded on the west by the Bay of Bengal and the estuary called *Naf*; on the north, by a range of mountains named *Wé-la-toung*, and by a line not well defined running N. E. through a hilly country to the *Kola-dan* river; on the east by the *Yú-ma* mountains; and on the south it is separated from the district of *Aeng*, and the island of *Rambree*, by various straits and creeks.

On the north, between *Arakan* and the *Chittagong* district, at some distance from the sea-coast, there are several tribes living among the hills and forests, who have hitherto remained independent of the British government. Our authority extends up the *Kola-dan* river, about 130 miles north from the town of *Akyab*, to the mouth of a stream called the *Oo-tha-lang*, but beyond that, stretch mountains and forests to the north-east, hitherto untrodden by civilized man, as far as *Munneepoor*; here live various savage tribes, who appear to be in a constant state of warfare with each other. On the east our boundary up to the *Yú-ma* mountains is only nominal. The tribes

* We give the name *Arakan* as a general term to four districts, which by the natives is restricted to what is the present district of *Akyab*. In this paper the name *Arakan* is used in the latter sense.

for 15 or 20 miles west of that range are independent, and have never submitted to any regular government, neither to that of the *Arakan* kings, the Burmese, or the British.

The boundary above described contains about six thousand square miles, of which from 12 to 1500 on the eastern side, are, from the inaccessible nature of the country, under the controul of the mountain tribes.

In *Arakan* there are three principal rivers; viz. the *Mayú*, the *Kola-dan*, and the *Lé-myo*; these all flow in a general north and south direction, at an average distance of 15 or 20 miles apart, the *Mayú* being to the west, the *Kola-dan* in the centre, and the *Lé-myo* to the east. Their channels are separated by ranges of hills running in the same general direction of N. and S.; the principal rocks are sandstone and shale.

In the upper course of these rivers, or about 150 miles from the sea, the hills are lofty, and so massed together, that the direction of the ranges is not discernible; but as the rivers descend, the country becomes open; then ascend a height; and single ranges of hills are seen, with broad and fertile plains extending from their bases as far as the eye can reach; the plains, dotted here and there with villages, are intersected by innumerable streams, and the bright-green rice fields, alternate with dark forest tracts. The three rivers for the last 20 or 30 miles of their course, are connected together by a vast number of creeks, through which all communication in the delta takes place. The *Kola-dan* in the lower part of its course is called the *Ga-tsha-bha*. The different branches of the *Lé-myo* in its lower course take various names.

The ancient history of *Arakan* presents such a tangled web of fiction, that I shall not attempt to give it in detail. I have not had sufficient leisure to study the subject, and my object being merely to give an account of the present state of the country, I shall only refer to its ancient history so far as is necessary to give a general idea of its condition previous to the British conquest, and to shew what race the present inhabitants belong to. The inhabitants are,

In the Plains.—1. *Ra-khoing-tha*.—2. *Ko-là*.—3. *Dom*.

In the Hills.—1. *Khyoung-tha*.—2. *Kú-mé* or *Kwé-mé*.—3. *Khyeng*.—4. *Doing-núh*, *Mroong*, and other tribes.

The *Ra-khoing-tha* and *Khyoung-tha* are of the same race. Like the Burmans their national name is *Myam-má*, the first appellations here given being merely local, the former signifying inhabitant of *Ra-khoing* country; the latter, or *Khyoung-tha*, being the name given to those who inhabit the banks of mountain streams within the same villages as the hill tribes, and support themselves by hill cultivation. How they came to be separated from their countrymen does not appear; it is rather extraordinary that they should remain so, as they subject themselves in the hills to great hardships, while to procure a subsistence in the plains is a matter of no difficulty. Lately I have seen some instances of their settling in the plains and cultivating land with ploughs. The religion of both these people is Buddhism; they may be said to belong to the Mongolian family, or to be between the Mongolian and Malay race; their written language is the same as the Burmese; in the colloquial there are some provincial differences.

The *Kolas*, or Moosulmans, are of an entirely different race to the preceding, they being of Bengalee descent. The *Arakan* kings in former times had possessions all along the coast as far as *Chittagong* and *Dacca*. Coins are still extant, struck by the viceroys at the former town, with Bengalee and Persian characters on one side, and Burmese on the reverse. While the Arakanese held these possessions in Bengal, they appear to have sent numbers of the inhabitants into *Arakan* as slaves, whence arose the present *Kola* (foreign) population of the country; they form about 15 per cent. of the whole population. The *Arakan* Moosulmauns preserve the language of their ancestors for colloquial purposes, but always use the Burmese in writing; they have also adopted the dress of the country, with the exception of the *goung-boung*, or head dress.

The third class in the plains are *Doms*. These form such a minute section of the population, that it is scarcely necessary to mention them. The *Doms*, it would appear, were brought from Bengal to be used as *Phrakywn*, or pagoda slaves. It is a strange anomaly in the Búdhist religion, (as it prevails in Burmah,) that the servitors of the temples are invariably outcasts, with whom the rest of the community will hold no intercourse. In Burmah Proper, pagoda slaves are pardoned convicts, or persons condemned to the employment on account of crimes. The kings of *Arakan* finding in Bengal a number of degraded

castes ready made to their hands, imported them and their families as perpetual and hereditary pagoda slaves. Their duties were to sweep in the vicinity of the temple, clear away the remains of offerings, whether of food, flowers, &c. and also to wash the idol. These people of course are now released from their compulsory servitude, and have become cultivators, but in consequence of their former condition, they are regarded by the people with as much disgust as they would be from their low caste, by Hindoos.*

Since the conquest of *Arakan* by the English, a large number of Bengalees have settled in the town of *Akyab* as shop-keepers, and in the vicinity as cultivators; these are not taken into account. In the interior reside a few Brahmins, some of Munnipooree descent, who were brought by the Burmese as astrologers, and some are descendants of colonists from Bengal, brought by the *Arakan* kings. I am inclined to think, that the Arakanese monarchs were in latter times very Brahminically inclined, and that the Burman conquest by infusing fresh Buddhist vigour, and contempt for *Kolas* generally, followed by our own occupation of the country, has prevented the introduction of Hinduism, which probably would have been brought about in the same manner as it was in *Munceepoor*. The hill people, the *Khyoung-thás*, have already been described; next come the *Kú-mí*, or *Kwe-mí*, tribe.

* The Arakanese have so far adopted the Hindu prejudice against them, that if any *Ra-khoing-thá* has unwittingly eaten with, or drank water from the utensil of a *Dom*, or other low caste Hindu, he is excluded from society until he has undergone certain purifications. Some years ago, when in consequence of inundations on the W. coast of the Bay of Bengal the population was reduced to great distress, a number of Ooryas found their way to this coast, and were purchased by Arakanese, or pledged themselves for service, they became inmates of families, and eat and drank with them; all at once it was noised abroad, that Ooryas were no better than Doms, than pagoda slaves. Numbers of respectable persons, men, women and children were forthwith declared unclean. They were excluded from the villages, the public festivals, and the *kyoungs*, or monestaries. To restore them was no easy matter. In former times the king had only to smoke a cigar after it had been used by an outcaste, and he was deemed restored forthwith; but now the royal line no longer existed in the country. At length it was settled that a meeting should be held of the most respectable men in the country, who agreed to smoke with the unclean; the pipe to be handed last to the European Magistrate, and then a general feast to conclude all. The ceremony was gone through with the help of numerous *Phoon-gyees*, (or priests), and much to the comfort of the outcasts, deemed and held to be sufficient for their restoration to society.

This hill tribe belongs to the same great family of the human race as the *Myam-má*; their languages being apparently of the same structure; their physiognomy alike; they have black strait hair, high cheek bones, oblique eyes, and scanty beards. The *Kúmís*, in short, appear like *Ra-khoing-thás* in a more rude state of existence; the traditions of the latter people refer to the former as already possessors of the country when the *Myam-má* race entered it. The *Kumís* chiefly inhabit the *Kola-dan* and its feeders. They are divided into several clans, which will be enumerated hereafter.

The next hill tribe is the *Khyeng*. There is comparatively a small number of this people within our border, that is to say, within the actual bounds of British authority in *Arakan*; only those who live on, and near to the banks of the *Lé-myo* river, are subject to our controul. Eastward of this river, up to the great *Yú-ma-toung* range, there are powerful tribes of this people, who rejoice in perfect freedom, (as long at least as they can defend themselves from the attacks of their neighbours.) They are separated from British authority by pathless mountains and forests, and being to the west of the *Yú-ma-toung* range, the Burmese have no dominion over them; many indeed to the eastward of those mountains are virtually independent of Burmah. The *Khyengs* live in the same primitive style as the *Kú-mís*, their manners and appearance being similar.*

The remaining hill tribes are the *Doing-núk* and the *Mrúng*. They both inhabit the upper course of the *Mayú* river. The language of the first is a corrupt Bengalee. They call themselves *Kheim-bá-nago*. Of their descent I could learn nothing; probably they may be the offspring of Bengalees carried into the hills as slaves, where their physical appearance has been modified by change of climate. In religion

* There is a class of people residing in the Chittagong district, who call themselves *Raj-bunsé*, and in Burmese *Myam-má-gyee*, or "great *Myam-mas*." They pretend to be descendants of the kings of *Arakan*, a flattering fiction which they have invented to gloss their spurious descent. They are doubtless the offspring of Bengalee women by *Myam-más*, when the latter possessed Chittagong, and other districts in Bengal. Their dress and language are Bengalee; but they profess the religion of their fathers, viz. Buddhism. These people are called *Mugs* in Bengal, and being well known in Calcutta as *Mug cooks*. I believe it is pretty generally supposed that the Arakanese are one and the same with them; a terrible insult to the Burma race! All Arakanese are termed *Mugs* by the people of India, from whom Europeans have borrowed the name. How it arose I cannot say.

they are Budhists. The people called *Mrúng*, by the Arakanese, announce themselves as descendants of persons carried away from Tipperah several generations back by the *Arakan* kings. They were first planted on the *Lé-myó* river, with the view I suppose of cutting off their retreat to their own country; but when *Arakan* became convulsed in consequence of the invasion of the Burmese, they gradually commenced leaving the *Lé-myó*, and returning through the hills towards their own country. For a time they dwelt on the *Kola-dán*; now none are to be found in any part of *Arakan*, save on the *Mayú* in its upper course, and only a few stragglers there. Many still reside, I understand, in the hills on the E. frontier of the *Chittagong* district. By a reference to a few words of their language, given in the appendix, those acquainted with the language of the *Tipperah* tribes will be able to decide whether the tale the *Mrúngs* tell of their descent be true or not.

Having given an outline of the various tribes which now inhabit *Arakan Proper*, I proceed to offer some suggestions as to the original inhabitants. The traditions of the *Ra-khoing-thás* refer expressly to the hill tribes as being in possession of the country when their own ancestors entered it. The *Khyengs* have a tradition that they are direct descendants of some Burmese refugees, or the remnants of an army that was lost in the mountains when attempting to penetrate to the westward. From the *Kú-mís*, I could gather nothing as to their own origin, but I consider both tribes akin to the *Myam-má* race, and distinct from the Malay.* If it be true, as is asserted, that the immigration of the Malay race to Malacca, Quedah, and other districts from Sumatra is an occurrence comparatively of late date, then it is very improbable that they should have come so far north as 21° of latitude in a remote era. The *Khyengs* and *Kú-mís* are probably an offshoot of the *Myam-má* race, who left their original seat earlier than the immediate ancestors of the *Ra-khoing-thás*. The most southern *Kú-mí* tribes who inhabit the *Kola-dan*, represent themselves as being driven further south each succeeding year, in consequence of the encroachments of the fiercer tribes beyond them. These encroachments still proceed.

* To whom the hill tribes in this quarter have been assigned by Pemberton.

The *Ra-khoing-thas*, (whose national name, as before mentioned, is *Myam-ma*, whence the corruption *Bur-má*,) are so called as inhabitants of the country *Ra-khoing*, and this name is said to be derived from the Pali word *Rak-kha-pu-ra*, signifying “abode of demons,” which name may have been given to the country by the Bùdhist Missionaries from India. The classic name for the country, and that used in all state papers, is *Dha-gnya-wa-ti*.

The book which the learned refer to, as containing the whole account of their nation, is called *Ra-dza-wang*, or “History of Kings,” of which many copies exist, differing from each other in details of the early history, yet preserving alike the main features; there we are told that in *Oo-taya*, the northern division of the world, reigned the king *Ma-ha-tha-gya*, whose younger son, in consequence of a quarrel, was forced to fly his country. He came to the kingdom of *A-the-toing-dza-na*, (supposed to lie north from the city of Ava,) where he married the king’s daughter, and had by her ten sons and one daughter. These children departed to seek a home elsewhere; they came to the site of the present town, *Than-dwe*, (*Sandoway* as we usually write it,) which acquired its name from their binding it with an iron chain, so that the country no longer moved as was its wont; the germ of this account may possibly be the tradition of an earthquake or volcano in some remote period. The ten brothers and their sister now acquired the country. In various ways, eight of the brothers were killed, the remaining two brothers and their sister, who is named *Ang-dza-na-de-wi*, pursued their way northwards for *Arakan*. They were accompanied by a *Byam-ha*, which in Burman Buddhist writings usually means I believe a celestial being, but here it is interpreted to mean a human Brahman or *Pun-na*;—whence he sprung does not appear. On the road the two remaining brothers were killed, one by a *Bhi-lú*, or human flesh-devouring monster, the other accidentally by a hunter’s arrow, discharged at a deer. The *Pun-na* and the lady proceeded alone; on their arrival in *Arakan*, they find the male line of the royal family is extinct. So confused is the account, that *Arakan*, which before was represented as one vast forest inhabited only by *Bhi-lus*, is here said to have a large population, and a queen over it. The *Pun-na* forthwith marries the daughter of the last king, and their progeny fill the throne for several generations. The sister

of the ten brothers becomes the second, or inferior wife of the *Pun-na*. Why this long story of the ten brothers and their sister was given does not appear; they are not of any importance to the after-history, for according to it none of their descendants fill the throne, or exercise any authority; but in this account we may recognize the first entrance of the *Myam-ma* race into *Arakan*, which we may infer, by the story of the town of *Than-dwe*, took place rather by the delta of the *Arawati*, where communication is easy, than by the mountain passes farther north.* Yet the *Ra-khoing-thas* of the present day believe themselves to be descendants from a western people. They confound those who were their religious instructors with their progenitors, and fancy themselves of the same stock as the Hindus. The above abstract of their history contains evident marks of a mixture of genuine national tradition, and the invention of later times, when they had been taught the use of letters, and had been instructed in religion by Buddhist Missionaries from India.

To proceed with the historical abstract, the descendants of the *Pun-na* long governed the country,† but supernatural monsters again prevailed, and the whole population was destroyed. All these events occurred after the manifestation of the Boodh *Ka-tha-ba*, and before the advent of the Boodh of the present period, *Gau-ta-ma*. As this latter person is supposed to have lived B. C. 543, the *Arakan* annals vie with those of India in antiquity!

Arakan then was again made desolate by *Bhi-lus*; at this time *Ang-dza-ná*, the son of the king of *Kapi-la-wot*, (or *Ma-ga-dha*,) having left his country and wandered through forests and mountains, arrived at the source of the river *Kola-dan*; there he had intercourse with a doe, which big with young, was carried down the stream in a flood, and cast ashore at the mouth of the *Mee-khyoung*, a mountain stream which joins the *Kola-dan* from the eastward; there the doe brought forth a son. A hill chief, of the *Toung-mru* tribe, was out hunting, when his dog pursuing the scent of the doe led him to the spot where she lay, and he saw the body of a beautiful child "shining,"

* I refer here to the entrance of the people who now inhabit the plains, not to that of the hill tribes, who though I suppose them to be of the same stock, had come much earlier, and were more rude than the new comers.

† Cities on the east, and ninety-nine on the west of the *Ga-tsha-bha* river are said to have flourished.

as the history has it, in the midst of a bush ; the doe started off, and the hill chief taking up the infant conveyed him home. The child when grown up, marries the chief's daughter ; but not from this union was the royal race of *Arakan* destined to spring. The doe-born youth is named *Ma-ra-ya* ; he becomes the favourite of the *Nats*, who furnish him with magic weapons, and he clears the country of the monsters who ravaged it. By some strange accident, which is not explained, a princess of the *Pun-na* dynasty has been preserved amidst the general ruin ; she is discovered by the doe-born son of *Ang-dza-na*, and they are married. The country once more becomes populated, and the city of *Dha-gnya-wa-ti* is built to the north of the present city of *Arakan*.

Of this race fifty-five kings reigned throughout a period of 1800 years ; another dynasty then succeeded, which numbered twenty-four kings, whose reigns extended throughout a period of 835 years. Then came the king *Tsan-da-thoo-vee-yá*, who was not of a different dynasty, but in his reign the Boodh *Gau-ta-ma*, having been born in *Ma-gadha*, visited *Arakan* ; the pious king in honour of him built the famous temple of *Ma-ha-mu-ni*, which still exists ; before *Gau-ta-ma* left *Arakan*, the king caused a brazen image of him to be cast ; or rather it was miraculously formed by the *Nats*, being a likeness of the Budh when living, and being for ages after endowed with the faculty of speech, it became celebrated in all Buddhist countries. This image was carried away by the Burmese after their conquest of the country in A. D. 1784, and is still to be seen in *Amerapoora*, where it is regarded with peculiar devotion.*

The successors of *Tsan-da-thoo-wee-ya* are recorded in regular succession, though the dynasties are frequently changed. One hundred and thirty-five kings extend from *Tsan-da-thoo-vee-ya* to the last king, *Ma-ha-tha-ma-ta*, who reigned when the country was conquered by the Burmese. The *Arakan* kings in the interim, "if they have writ their annals true," carried their victorious arms into the valley of the *Ari-wa-ti*, to Siam, and even to China. The present *Arakan*

* Before their conversion to Buddhism, the *Myam-mas* had probably the same simple religious rites which we see among the hill tribes to this day, *i. e.* occasional offerings of food, flowers, &c. to the *Nats* or Spirits, placed in the open air. Indeed these offerings are still common throughout Burma, though they are disallowed by strict Budhists.

era corresponds with A. D. 639; from what event it was established is not mentioned, but I have been told that the former era having extended to many hundred thousand years, had become inconvenient for ordinary purposes, and therefore a new one was commenced.

The first king whose reign is calculated in the *Ra-dza-wang*, according to that era, is *Meng-Tsan-mwon*, who ascended the throne in 746, equivalent to A. D. 1385; before his time the number of years each king reigned is entered, but not the year of his ascent according to the era, though of course this is easily ascertained. His grand nephew, *Ta-tsan-phyoo*, who succeeded in 821, or A. D. 1460, had extensive possessions in Bengal. Coins of that date now exist with legends in the Bengalee and Persian character, as well as Burmese, some being struck by the viceroys in Chittagong, others in the name of the king himself. About a century later, the Portuguese appeared and attempted to conquer *Arakan*. I say the Portuguese, though the natives now call them *Angleit*, and I believe them to be no others than the English. But *Ang-leit* is, I think, an interpolation of the copyists of the *Ra-dza-wang* in later times; the invaders are first called *Bho-dau-thwe-pha-laung*, the first word being apparently a corruption of Portuguese, and the second a term of contempt towards foreigners, *pha-laung* being a provincial word for a tadpole. In the latest editions of the history, the white invaders in ships are called *Bho-dau-thwe-aung-leit-pha-laung*—i. e. Portuguese-English tadpoles.* The invasion by the Portuguese occurred in the reign of *Meng-bha*, and the same year a son being born to him, was known afterwards by the name of *Meng-pha-laung*. This king in A. D. 1610, (vide Marshman's *History of Bengal*,) joined with some Portuguese adventurers in invading Bengal, when they took Bulooa and Luckipoor. This event is also recorded in the *Ra-dza-wang*. In A. D. 1666, we learn from the *History of Bengal*, that Chittagong was lost to the Arakanese, they being defeated on the banks of the Tenny river by the Subadar of Bengal. After this defeat, the Arakanese were occupied with feuds at home; the old race of kings was deposed in 1124, or A. D. 1763, and different chiefs, one after another, took possession

* This term *pha-laung* is still frequently screamed after Europeans by children in the streets of *Akyab*, the little rogues then run off laughing heartily.

of the throne. At length the Burmese, on the invitation of *Than-dau-we*, who was the *Myo-thoo-ggee*, or head fiscal officer, invaded and conquered the country. The reigning king at that period was *Ma-ha-tha-ma-ta*, and his son *Re-bhau* is still living in *Amerapoora*.

In various parts of *Arakan* there are traces of a much more extensive population than it contains at present. The ruins of the ancient temple of *Maha-muni*, built entirely of stone, the sites of former cities shewn by the remains of tanks and ruined pagodas, the extensive stone walls at the old capital, certainly tell of a more flourishing kingdom than what the British found it; but we have no satisfactory evidence of the *Arakan* kings having subjugated Burmah and Siam, much less China! Of the conquest of a part of Bengal, we have credible historical evidence. At Dacca, I believe are still to be found the remains of a Bhudhist *dze-di*, or pagoda, which can only be attributed to the conquering Arakanese. The name *Tset-ta-goung*, of which Chittagong is a corruption, is Burmese, and the descendants of people of Tipperah brought hence from that country, still survive. There are also some villages of Shan descent, but those people were most probably brought from the Shan population, which is to be found located west of the river *Ara-wa-ti*.

The Burmese established their head-quarters at the old capital. For a few years their government was undisturbed, but at length rebellions were stirred up by an individual called by the English *King-berring*,* who was the son of *Than-dau-we*, the *Myo-thoo-gyee*, who had first invited the Burmese into the country. Many of the Arakanese fled into the neighbouring British province of Chittagong, and thus quarrels arose on the frontier. At length the Burmese having provoked the British government by several acts of aggression, *Arakan* was invaded by the English, who accompanied by a number of the former inhabitants, conquered it with ease, and entered the capital May 1825, since which period it has been annexed to the British Indian empire.

Arakan is divided into 160 circles, of which 148 are denominated *kywn*, or islands, being situated in the low lands, and 12 are called *khyoung*, or stream, being in the hill districts. They contain a total of

* Properly *Khyeng-byan*, lit. "*Khyeng-return*," so called because he was the first-born after his father returned from the *Khyeng* hills. A son of *Khyeng-byan* died in *Akyab*, A. D. 1840.

960 villages. Each of these circles is placed under an officer, designated *kywn-aop*,* or *khyoung-aop*, according to the locality of his charge. The duties of a *kywn-aop* are to collect the revenue, to preserve order in his circle, and to assist the police in the apprehension of criminals; through him are made all statistical inquiries, and to him are referred many disputes concerning land; he is paid 15 per cent. upon his collections. In each circle there are from 3 or 4 to 15 or 20 villages; the revenue collected by the different *kywn-aops* varies from 200 to 10,000 rupees: this great difference results from the rapid increase within a few years of some circles, compared with others, consequent on superior fertility of soil, more convenient locality for exporting grain, and other causes.

The office of *kywn-aop* is not hereditary, but the son of any man who has rendered essential services, generally succeeds on his father's demise.

Next to the *kywn-aop* is the *rawa-goung*, or village head. This officer is elected by the villagers themselves; if there are two or more candidates for the appointment, the villagers meet and sign their names to a document containing the name of him they vote for; these lists are then forwarded by the *kywn-aop* to the officer in charge of the district, (called *myo-woon*,) who appoints him that has the majority of votes, unless indeed there be some good reason for rejecting him. The people generally make a good choice; for the last three and half years I do not recollect more than one instance of such an election being disapproved. The *rawa-goung* collects the revenue of his village, and delivers it to the *kywn-aop*, who carries it to the government treasury. He is paid four per cent. on his collections. A village of thirty houses is entitled to a *rawa-goung*, that is, to a stipendiary one; if a village have a less than that number of houses, they pay their tax to a neighbouring *goung*, but if the villagers, as frequently happens, dislike this arrangement, and elect a *goung* of their own, the proceeding is confirmed, but they must pay him themselves. Their object then is to induce settlers to come among them, whereby their village may be raised to the privileged standard of thirty houses.

Under the orders of the *rawa-goung* is the *rawa-tsa-re rawa-tsa-gan*, or village scribe. He is paid two per cent. on the village

* This is pronounced as one syllable, *Kyok*.

collections. The appointment is usually held by the son or some relation of the *rawa-goung*. His duties are to prepare, under the orders of the *goung*, the village *sa-rang* or register, containing the name of each householder in the village, with the amount of tax demandable from him upon each item.

There are no agents of police in the villages; the village officers being held responsible for the preservation of order and the seizure of criminals.

Throughout the district there are six police stations, (*thanahs*), at which the police ordinarily remain, until information being given by a village officer or other person, of any occurrence requiring their presence, they proceed to the spot. Nearly all communication in the district is carried on by water.

The European functionary in charge of the district is styled a Senior Assistant to the Commissioner of *Arakan*, (by the people *myo-woon*.) His duties are of the same nature as those of a Magistrate and Collector in India; he also tries civil suits, and hears appeals from the native Judge's court. There is also a Junior Assistant to the Commissioner. To conduct all revenue affairs, there is an officer styled *myo-thoo-gyee*, whose office under the Arakan and Burman governments was considered the most important in the country; he then apportioned to each circle the amount of revenue demanded by the government; his duty now is under the orders of the Senior Assistant, to superintend all the *kywn-aops*, and to inspect and report on the annual registers of their circles; the office still carries with it a great deal of importance in the minds of the people. This officer is paid a fixed salary, and resides at the chief town of the district. The revenue business is conducted solely by natives of the country, and the language of the records is Burmese. The judicial officers of the Magistrate's court are Bengalees, chiefly natives of Chittagong, it not having yet been found practicable to introduce the *Arakanese* into this branch of the public service. They are however active and energetic police *darogahs*.

There is a native civil judge styled *ta-ra-ma-thoo-gyee*, who tries all suits for sums not exceeding 500 rupees. Few cases in *Arakan* are for a larger amount than this. The language of the Civil Judge's court is Burmese. He holds his court at *Akyab*.

The chief town of *Arakan* now, is *Akyab*; it is situated at the S. W. extremity of the district; it was first occupied in the beginning of 1826, and consisted only of a few fishermen's huts called *Tset-twe*, the name by which the present town is still known to the natives. The old capital, which lies about 50 miles distant N. E. from *Akyab*, was abandoned on account of its unhealthiness. The site of *Akyab* was well chosen. It is at the mouth of the principal river of the country, the natural outlet for the produce of a vast extent of fertile land; the soil in the immediate vicinity is of a light sandy nature, unlike that of the interior, which is generally clayey; both the traditions of the people, the appearance of the surface, and the marine remains, proclaim the site to have been but lately redeemed from the sea. Shells are to be found near the surface in the streets of the town, and on the roads of the station; west of the station is to be traced a raised sea-beach, along which a road now runs towards the river *Ma-yu*, and between it and the present sea stretches a plain of more than a mile in extent; here tradition also points out where ships used formerly to be moored.* To the S. W. of the station is a ridge of sandstone rocks running nearly N. and S. some distance inland, and elevated in some places from 25 to 30 feet above the highest tides; to this height the rocks are perforated by marine animals. There is no tradition regarding any convulsion having raised this tract of country. The same effects are visible along the coast for 50 or 60 miles from *Akyab*. In the upper portion of the ridge of rocks above mentioned, no shells are to be found in the perforations, but lower down oyster-shells are still seen adhering to the rock. On the opposite shore of the *Akyab* harbour is a remarkable conical-shaped rock on the top of a little hill elevated above the water about 150 feet. It is stated, that in the reign of king *Thoo-re-ya-tseit-ra*, the water was so high, that this conical rock was only just protruded above the surface, and the king on the occasion of a war-like expedition, deposited there his hair comb as an offering, without moving from his boat; hence the rock is called to this day, *Oo-bee-gyap-toung*, "Head-

* *Akyab*, the name given to the present town by foreigners, is perhaps derived from the name of a pagoda built hereabouts, which was probably a good land-mark in former times, and therefore well known to mariners. The site of the pagoda is called *A-khyut-dau-kun*, "Royal-jaw-bone hillock," from a jaw-bone of *Gautama's* being buried there.

comb placing hill." *Akyab* is a very regularly built town ; the streets are broad, and all run at right angles to each other ; the houses are of flimsy materials, being built only of bamboo and canes of the *nipah* tree, but they are spacious and airy, and being elevated a few feet above the ground, are admirably adapted to the damp climate of *Arakan*. The population of *Akyab* does not exceed 5,000 souls, excluding some villages which form the suburbs.

The whole of the land of *Arakan*, whether forest, cultivated or fallow, is the property of the state ; but as it seldom happens that the state has cause to assert its claim, the great mass of land is transferred by sale from hand to hand, or inherited from generation to generation, like other property. Every man who purposes bringing waste land into cultivation, gives notice of his intention to the *rawa-goung* ; either that officer, or the cultivator himself if he pleases, informs the officer in charge of the district, and the land tax is remitted for two or more years, according to the nature of the soil, and the jungle to be cleared. Cultivation and occupation of land give a prescriptive right to a cultivator as long as he pays the Government demand upon it, but if he abandon it without entering into an arrangement with any body else to keep it in cultivation, or to pay the Government demand, he forfeits his right to it. The cultivator then has the possession, but not the property of the soil. By custom a distinction is made between rice land, and that which has been enclosed for gardens. If a portion of the former be taken for public purposes, a road for instance, the common law of the country gives the cultivator compensation ; but in the case of gardens, the owner is entitled to the value of every tree and shrub they contain ; all produce being *bona fide* his private property. Some cultivators make over their land to others for a year or more, if from any cause they are unable to cultivate themselves ; if their land be very productive, or have any peculiar advantages of position, they receive a rent for it from the sub-tenant which frequently equals the Government demand ; these arrangements among the people are not interfered with ; the former tenant's name remains in the village register, and he is responsible for the Government tax, unless he has formally given notice to the *rawa-goung*, that he is not going to cultivate. On the death of a cultivator, his land is inherited by his heirs in like manner as if it were

his own property ; the law of the people, whether Burman or Mahomedan, regulates the proportion which the heirs receive.

The mode of "settlement" of a village in *Arakan* is as follows:— During the month of February, by which time the crop is cut, and the grain for the most part thrashed out and winnowed, the *ra-wa-goung* gives notice to the cultivators that he is about to measure their lands ; he is accompanied by the village scribe, and the cultivators of the fields in the direction of which he is proceeding ; sometimes the *kywn-aop* is present, but not always ; in extensive circles he cannot personally superintend the measurements in all the villages.* The cultivator whose field is to be measured holds the bamboo, which is 12 feet long, and measures out the length and breadth of his field, which is then written down by the village *tsa-re*, hence the area is deduced and the village register prepared. Thus the *ra-wa-goung* goes through all the lands of the village. In the register is entered the name of each householder, his wife's name, (but the women are not so carefully registered as the men,) each lodger, and formerly every bachelor above the age of 18 years, together with the amount of tax due from them, whether for rice land, garden land, or capitation tax. To make a return of those persons subject to capitation tax, the *ra-wa-goung* must be acquainted with the age and condition of each villager, whether married or unmarried, a householder or lodger. This tax formerly extended to all males above the age of 18, who were deemed capable of manual labour ; but within the last year (1840,) this objectionable tax has been much reduced, unmarried youths wholly exempted from it, and the train laid for its eventual abolition.†

The village register being framed is delivered to the *kywn-aop*, who has received like registers from each village in his circle, and he delivers them into the *yon-dau*, (kucheree,) where they are compared with those of the past year ; if no doubts arise as to their

* The land measure now in use in *Arakan* was introduced from *Chittagong* in 1835. Up to that period the tax was levied not upon the area of cultivation, but upon the ploughs, each plough being estimated as equal to a *doon* of land. A *doon* contains 30,720 square yards, equal to a little more than six and a quarter English acres.

† A poll tax is not necessarily of that hateful nature generally ascribed to it, and certainly it is not so regarded in *Arakan*. We have an instance of a self-governed people voluntarily imposing this tax upon themselves. "In the state of Massachusetts, every male citizen, from 16 to 60, is subject to a poll tax, which is commonly a dollar, or a dollar and a half."—*Goodrich's Universal Geography*, Boston edit. p. 340.

accuracy, they are accepted ; if they appear incorrect, inquiries must be instituted through other channels than the village officers. Supposing them to be accepted, the *kywn-aop* then receives slips of paper, called *kyoung-hlya*, which are bills presentable to each tax-payer for the amount demanded from him, with a specification of the item of taxation for which the demand is made, whether for rice-land, garden-land, capitation, or the extent of his land by measurement, and the months in which each instalment is to be paid. No man can be called on to pay any tax without a bill for the amount, bearing the seals of the *myo-woon* and *myo-thoo-gyee* being presented to him ; the village officer must give a receipt on the back of the bill for each instalment paid. If a tenant be dissatisfied with the measurement of his land, and dispute the amount demanded in the bill, either a new measurement by the village officers is ordered, or, at the request of the tenant, a person unconnected with them is sent to remeasure the land ; the expence of this new measurement falls on the village officer if his out-turn be found incorrect, or the cultivator if it be correct. The above process of registry and land measurement is continued yearly. It is not to be supposed that from so rude a people really correct survey of the cultivated area is to be obtained ; all that can be hoped for, is to procure a fair approximation to the actual amount.

The cultivated rice lands are divided into three classes, which pay at the rate of 12, 10, and 8 rupees per *doon*. The first sort will produce from one thousand to twelve hundred baskets of *dhan*,* which will sell on the average at from 10 to 12 rupees per 100 baskets. One man with a pair of buffaloes will cultivate a *doon* of land with ease ; the produce will fetch, in ordinary seasons, from 100 to 120 rupees ; the tax payable to Government therefore for this class of land is from 10 to 12 per cent. of the gross produce of the soil ; the profit from the second and the third class of lands is from 1 to 2 per cent. less than the above ; the cultivator thus realizes a handsome profit, and is certainly never distressed to make payment. I have never known a single cultivator a defaulter. The grain market has hitherto been a sure one ; the cultivator receives for his grain cash payment from the ship, which

* The basket of *Arakan* proper is much smaller than that of the Southern districts ; 100 of rice of the former are equal to about 30 Indian maunds.

anchors alongside the field that has grown the rice. It is principally exported to Madras, Coringa, and Masulipatam. A reference to table B will shew the rapid increase of the *Akyab* rice trade; we there see a population of less than 1,50,000 souls, growing and exporting grain to the value of eleven and a half lakhs of rupees. Only one rice crop is raised in the year. The tax on gardens is higher than that on rice land, being at the rate of 16 rupees per *doon*.

Wages in *Arakan*, compared with those of Bengal, are very high. For ordinary labour the people of the country cannot be hired at a less rate than four annas a-day, or if by the month, six rupees; though for some sorts of work they demand seven to eight rupees a month. In the reaping season, which generally commences in December, many hundreds, indeed thousands of coolies come from the Chittagong district by land and by sea, to seek labour and high wages. They are engaged by the Arakanese cultivators, and are generally paid at a certain rate for the quantity of rice cut down. If they work diligently, I am informed they can earn from four to five annas per diem; in their own country their labour for the same time would not bring them more than six pice, or at the most two annas. The Bengalee labourers are not much employed in ploughing the land; that work is performed in the rainy season (about the middle of June) at the commencement of which they for the most part return to their homes. They are beginning however to seek employment also in ploughing land. One great source of loss to the cultivators, is the frequent occurrence of a murrain among their cattle, by which thousands sometimes perish in a single year. In 1839-40 a sickness prevailed among the cattle, simultaneously with the *cholera* among the inhabitants, by which 16,000 head, cows and buffaloes, were carried off. The cattle are replaced from *Chittagong* and also from Ava. I have been much interested at witnessing the cheerfulness and determination with which a cultivator would set to work at his field by spade, after losing his buffaloes, worth perhaps from 40 to 50 rupees the pair, determined to labour hard in order to replace them as soon as possible.

A measure has lately been sanctioned by government for the whole province of *Arakan*, which is calculated to extend largely the cultivation of jungle tracts, and perhaps eventually alter the tenure of all land in the country. Rules have been passed for grants of large

areas, and they are so liberal in their terms, that they cannot fail to be successful. They confer leases in the first instance for periods varying from eight to sixty-four years, according to the nature of the land ; rent free for half the period of the lease, and at a low rate of rent for the remainder. The hereditary right to the soil is declared as long as the grantee fulfils the terms specified ; future leases for twenty years are guaranteed at a no higher rate than the average of that paid by adjoining government lands. The people do not yet sufficiently appreciate the advantages to be eventually derived from these grants, but they are gradually becoming more sensible of their value. Numbers of the descendants of those who fled in troublous times from their country, and settled in the southern parts of Chittagong, the islands of the coast, and even the Sunderbuns of Bengal, are gradually returning. Rumours of an attack from the Burmese have prevailed among them for the last three years, and retarded their return, but this alarm has now subsided, and during the N. E. monsoon, boats filled with men, women, and children, with all their worldly goods, may be seen steering south along the eastern coast of the Bay of Bengal, to return to the land their fathers abandoned 30 or 40 years before. They have told me, that in their exile the old men used to speak with regret for its loss of the beauty of their country ; the fertility of the land, which returned a hundred-fold ; the heavy ears of rice ; the glory of their ancient kings ; the former splendour of the capital ; the pagodas, and the famous image of *Gautama* now carried away, with which the fortunes of the country were indissolubly united. Who would have imagined that *Arakan* could inspire such sentiments !

It is a question of interest to consider how far the people of *Arakan* are satisfied with British rule. The mass of them are infinitely better off now as regards personal freedom, wants, and comforts, than they were under the government of their native princes or the Burmese, and they are doubtless sensible of the advantages they now enjoy. During the times of the *Arakan* kings, and the Burman governors, the people were not called upon to pay much in regular taxes, but there were constant calls on them for labour, for service, and for materials to make or repair the houses of the *kywn-aops* and other government officers ; besides which, the circles were obliged to furnish the public officers with followers for special duties ; the people therefore

had no certainty of the amount that would be demanded from them. *Arakan Proper*, after paying its own expences, or satisfying its local government, was required to furnish subsistence for the royal white elephant; this amounted to 120 viss of silver annually, or about Company's rupees 20,000. All the lands west of the river *Mayu* were set apart for the Tharawadi Prince, the present king of Ava. He appointed to them an officer, who remitted to Ava yearly the tribute due to the prince, which amounted to about 3000 rupees. Neither the *myo-woon*, nor any of the public officers received any fixed salary, but had fees upon all collections and customs, and a share of all fines imposed. Each buffaloe plough paid yearly 15 Burman baskets of *dhan*, equal to $10\frac{1}{2}$ maunds. Each bullock plough paid ten Burman baskets. There was also a capitation tax on each married householder. When the *myo-thoo-gyee*, and other officer was called to the court of Ava, the province had to pay the expences of his journey, as also of the journies of the *myo-woon*, and other officers appointed from Ava, on their coming to assume charge, likewise on their recal. A certain number of men were expected to take to Ava every year a beautiful flower peculiar to *Arakan*, which none but the royal family were allowed without permission to wear in their ears or hair; others were set apart for keeping the royal gardens in order; sixty were always to be at work at Ava, and had to be supported by the remainder of their number in *Arakan*; they were relieved annually.

These various calls upon their industry, the general poverty from stagnation of trade, and the flight of a large portion of the populace, together with nearly all the respectable families, made the condition of the people very wretched, and the contrast is infinitely in favour of the present state of things. But the upper classes do not participate in these congratulatory feelings to the extent that the lower do. They have regained their country, but not the high position they appear to have anticipated. They refer to the power they formerly had under their own kings; their being then allowed to hold slaves, who under our rule have been declared free; also the emancipation of the debtor slaves, who having pledged their persons were bondsmen to their masters, until they could repay the sums advanced.

The upper classes, and the literati, who are much respected, speak with regret of the neglect now shewn to pagodas and religious edifices,

which formerly were repaired by the government ; they declare there is a general decay of *dhamma-wat*, or virtue, among all classes ; less attention to religious duties and ceremonies, which they attribute to the governing power not setting the example ; to this neglect also is attributed cholera and sickness among cattle, which of late, have frequently visited the country. The *phoongyees*, or priests, complain, that people are no longer constrained to respect in their presence the law, “thou shalt not kill,” but catch fish in tanks near the monasteries with impunity.

When *Khyeng-byan* raised a revolt against the Burmese, (he was the son of the man who first invited them across,) all the most respectable families joined his standard, and finally they fled to the Chittagong district. These men on the breaking out of war between the Burmese and the British, offered their services, through Mr. T. C. Robertson, then Magistrate of Chittagong, to assist in conquering *Arakan*. Some of them were connections of *Khyeng-byan*, and relations of those chiefs who, in the latter times of the kingdom when the regular monarchs were deposed, had one after another seized the throne. Among these men, two of the most distinguished were *Oung-gyau-ri* and *Oung-gyau-stan*, the former a brother-in-law of *Khyeng-byan*'s, rendered important services to the army of invasion ; the latter was a nephew of *Khyeng-byan*'s, and a man of influence and ability. After the occupation of the country, these men were amply provided for, but appear to have cherished hopes that when the British army was withdrawn, the country would be made over to them, or at least to a native dynasty. Both were impatient of controul, and were convicted of exercising their authority with cruelty. One was removed from his office of *myo-thoo-gyee* on a charge of bribery and corruption, and the other being convicted of severely wounding a police darogah with a *dha*, was sentenced to seven years' imprisonment.

In less than two years after the occupation of *Arakan*, the establishment of a native dynasty was canvassed and plotted for, and these two men, together with nearly all the influential persons in the country, were privy to intrigues to compass that object. In December 1826, or January 1827, a grandson of *A-bha-ya*, a chief who had seized the throne and reigned for nine years before the Burman conquest, returned to *Arakan*. His father, named *Pa-tang-tsa*, had been carried to Ava

by the Burmese. The son of *Pa-tang-tsa*, named *Shwe-pang*, either had made his escape, as he averred, or been permitted quietly to depart the court of Ava, perhaps, hoping thereby to excite troubles in *Arakan*. Certain it is, that on his appearance, most of the headmen of the country were favourable to his claims, and attempts were made in April 1827, to tamper with the native officers and men of the Local Battalion. *Shwe-pang* was subsequently made a *kywn-aop*; the flame was smothered for a time, but the fire remained smouldering. Nine years after, the above named individuals were guilty of exciting a man, named *Kyeet-tsan-we*, to rise in arms; he commenced plundering the country, with the assistance of a band of escaped convicts, and other desperate characters, and some of the ignorant hill tribe, the *Khyengs*. He and his adherents were at length forced to fly into the Burman territory, whence they were brought back in the beginning of 1837, being given up by the Burman government.

This *emeute* was called *dakoity*, (gang robbery,) but the real object of the attempt was to seize the government of the country. The instigators were insane enough to believe, that the British government would be wearied out by their system of ravaging the country, and make it over to them on payment of a yearly tribute! Since this attempt, every thing has been very quiet. The English expedition to China has excited an intense interest among the *Ra-khoing-thas*, and as China is regarded as the first power in the world, the issue of the contest was held to be rather doubtful until the favourable result of certain magical calculations which were resorted to, when it was discovered to have been long ago foretold in certain books, that the English were destined to subdue China. There is in *Arakan* a village named *Ta-rouk*, the same name which the Burmese give to China. On going into the interior in January 1841, I directed my steps to this village first, in order to ascend a hill in the vicinity. The people were impressed with the belief that I was going there to have a mimic fight for the village, and order the inhabitants to come out and make their submission, as an omen for the success of the China expedition!

Within the last four years, great improvements have been made in *Arakan* taxes. It is difficult to account for such an impolitic and unjust system of taxation as existed up to 1836 ever having been proposed or adopted. Boats, nets of all sizes, cattle not used in agri-

culture : all trades, occupations, and callings had separate taxes upon them ; these have now been happily abandoned, and other taxes to the amount of nearly a lakh of rupees reduced, without any loss accruing to the state. The grants of land will raise up a new class in *Arakan*, viz. of extensive landholders with an hereditary right to their estates, whose interests will be bound to the British government.

Among the hill tribes I have omitted mentioning two, viz. *Kyan*, and the *Toung-mru*, of which only a few families exist. The former live on the *Kola-dan* among the *Ku-mis*, from whom they differ in some habits, but have the same general appearance. A few words of their language will be found in Appendix D. A few houses of the *Toung-mru* tribe are to be found in the upper course of the *Ma-yu*.

The hill tribes within the British territory, may as regards their relation with the government, be divided into two classes.

1st. Those who live near the plains, and are therefore entirely under the controul of the *Arakan* authorities.

2d. Those residing at a greater distance, and whose country is inaccessible for ordinary purposes.

The first are assessed at the rate of two rupees per annum for each cultivator ; the chiefs are answerable for the preservation of order in their clans, and must surrender all criminals to be tried by law. Slaves among these tribes have been emancipated.*

Among the second class, no inquiries are made regarding the number of cultivators, but the chief of the clan pays a fixed sum yearly in token of his fealty. The tribes of this class are not interfered with in their internal arrangements, but of course they are bound to abstain from all attacks on tribes within the British frontier, and indeed beyond it ; too frequently it is to be feared they join in the former, or furnish information which leads to them. They still hold slaves, and punish their own criminals in petty cases. It would be

* The chiefs complain of this as a great hardship. In a *Khyeng* trihe, I once met a young *toung-meng*, or chief, who had lost one of his fingers. It appeared that his slaves had one fine morning absconded, and he was obliged to set to work himself for his support in clearing forest land. By his clumsiness, he soon cut off a finger, and now he held up his mutilated hand to me, in dumb appeal for the restitution of his slaves. This young man was all hut naked, and a blush was visible in his clear olive cheek, when the *Ra-khoing-thas* with me threw a cloth over him, and he heard for the first time in his life, that he was committing a breach of decency in appearing unclothed.

next to impossible to controul them on these points, as they are separated from the plains by too difficult and dangerous a country to be approached, except by an armed party. The hill tribes pay their quotas in cotton, ivory, and other raw produce. Tribute is paid by all tribes residing within the limits, in which the *Arakan* and Burman governments formerly exercised authority. Some of these know us by name as some dreadful beings, but have never beheld an European.

The hill tribes live a life of danger, struggle, and hardship. The chiefs indeed have an easy time of it, but the women are especially hard worked. The latter are scantily clothed, as much so, however, as precipitous hills and a warm climate render necessary; they are stoutly made, but diminutive in size; the generality not exceeding in height four feet six inches. The *Ku-mis* (men) are not smaller in stature than the Burmese, the *Khyengs* I think are.

The hill cultivation is called in Burmese *toung-ya*. It consists in clearing away the thick forest, and luxuriant shrubs and creepers, which clothe the mountain sides. After the large trees are cut down, what remains of the underwood is set on fire; the stumps of the large trees are left standing. This work is finished in April. The seed, whether rice or cotton, is then put into the ground, small holes being dug or scraped a few inches apart, with a sort of hand hoe. The crop is reaped in October.* What a hard and bitter life must these people live! Each year the same labour must be encountered, the same dense unyielding forest be cleared, and yet they know not whether they shall be there to reap the fruits of their toil, or be carried off in an attack as slaves to some more powerful tribe. Notwithstanding the noble trees which find sustenance upon the mountains, yet the soil is so unfavourable to grain, that it cannot be raised again, the people say, upon the same spot in less than from fifteen to twenty years. I am inclined to think, that this is chiefly in consequence of the rich surface soil, when deprived of its protecting trees and shrubs being washed down the steep hill sides by the heavy rains; it is not until brushwood has again appeared, and the soil been bound again by bamboo roots,

* Besides grain and cotton, the hill tribes grow tobacco and a few esculent vegetables, such as pumpkins, gourds, &c. These are planted in little valleys, or by the side of streams, on soil left dry after the rainy season.

(which spring up very thickly in two or three years after a hill side has been cleared,) that sufficient soil is accumulated to nourish grain. Each returning season, then, brings for these mountaineers the toil and hardship of a new clearing. They are unacquainted with the terrace cultivation of other hill countries; indeed the hills appear too precipitous for it to be practicable. Spots favourable for clearings are by no means plentiful. The people have sometimes to go one, two, or more days' journey from their village, in small parties here and there, to sow their grain. In these separate clearings, they erect temporary sheds, raised from fifteen to twenty feet from the ground, and remain there until the work is finished, when they return to the village, leaving perhaps two or three hands to watch the crop. These people instead of the high raised sheds commonly used, sometimes sleep at night up in trees, where they have made a convenient resting place with interwoven branches, and a few split bamboos bound together with strong creepers, which interlace these forests in profusion. This practice has perhaps given rise to the tale, that some hill tribes had no regular dwellings, but lived in trees, more like apes than men.*

After a village has remained in one site for two or three years, all the culturable spots in the vicinity are cleared and exhausted.† The

* The tree-living *Kukis*, represented to live in the hills and forests east of the *Chittagong* district, have attracted considerable attention. The whole account of their cannibalism and tree-dwelling I regard as fable. There may perhaps have been instances of some of these savage tribes offering human sacrifices. I have had intercourse with very "pretty savages" in the wild country bordering on *Arakan* to the E. and N. E; all of whom had comfortable houses, even the poorest of them far more roomy than the wretched hovels of Bengalee peasants; these savages had intercourse with other tribes beyond them, but had never heard of tree-living and human-flesh-devouring people, though they had plenty of wonderful stories to tell of Amazonian tribes, where male children were destroyed, and of others who by magic could make themselves invulnerable. But these best authority is that of the *Khyoung-thas*, men of Burman race, who live among the hill tribes, and are comparatively civilized. Some of these I have known who had been taken as slaves, and passed to distant independent tribes, and subsequently regained their freedom. These men had never heard of tree-living men. The name *Kuki* was unknown to all, but the same tribes are called by many names. The tale has, I suspect, been received from Bengalee narrators in the *Chittagong* district, and incautiously received as correct. What European can vouch for its truth?

† I know two cases, one beyond the British territory, where tribes had a wide range of territory, and jealously guarded against any clearing being made in it by other tribes. They have thus kept their villages on the same site for more than twenty years, or crops, for so they reckon time. One of these villages was perched upon a rock almost inaccessible, it was therefore a favourite position, one not easily surprised.

people must then look out for another home ; their village is abandoned, and forth they go, men, women, and children, two, three or more days' journey, to build their bamboo huts near some spot where they may raise food ; men and women may on those occasions be seen toiling up the steep hills, their conical baskets on their backs, fastened by a strap passing round the forehead ; in some their children sleeping contentedly, others containing their worldly goods. I have entered deserted villages, in which perhaps half the people's property, such as it was, had been left, until they could return and take it away at leisure ; there were baskets of rice, *dhan*, pounding mortars, cotton spinning and weaving machines. I have even seen spoons, the bowl rudely cut out of wood, and a bamboo handle lashed on. The cotton cloths these people weave are really excellent, the threads are coloured with various vegetable dyes, blue, red, yellow, &c. and are frequently woven into very handsome patterns.

The houses of the hill tribes are built entirely of bamboo in the walls, the supports, and the flooring. They are roofed with leaves of the same plant. The houses are raised on platforms, and from the steepness of the hills, oneside may be from twelve to fifteen feet above the ground, and being supported by bamboo props, not more than two inches in diameter, they look very slight ; but last well, with trifling repairs, for three years, the general period for which they are required. The chief's house usually consists of a spacious hall, extending right across the dwelling, in which the feasts are held, and where is always a large hearth of plastered mud, on which a whole ox might be roasted ; on either side of the hall are separate rooms for the different members of the family, the unmarried sons and daughters. The houses of the people of course are not on such a large scale as the chief's, but they are spacious ; two families sometimes live together, in which case they ordinarily cook and eat separately.

The villages consist of from twenty to forty, or fifty houses, which are built as regularly as the nature of the ground will admit. The rapidity with which these people will run up a bamboo hut is surprising. Journeying in the hills, I have come to halting ground for the night, fifty *Ku-mis* with their *dhas* leap into the bamboo forest, which resounds with the sharp strokes of the *dha* in rapid succession, and forth they come, dragging the slender stems after them in bundles of eight or ten.

These are cut to the required size for the platform and roof supports, split and crushed for the walls and floor; the leaves formed into slate-like pieces, bound with battens; thin strips are cut to tie the whole fabric together, and in less than an hour, out of the confused rush of fifty dark forms, each has found his proper place and work, and there stands a comfortable house, which will shelter one from a severe storm, should it appear.

The villages of the remoter tribes are generally built on the tops of hills not easy of access; in these situations there is a scarcity of water for six months in the year, and the people are obliged to descend daily to the lowest dells for that necessary of life. These villages are invariably stockaded, and the ground in the vicinity thickly studded with sharp bamboo spikes, to prevent the approach of foes; they are as hard as iron, and to bare-footed men are a great hindrance, especially in the night time. The tribes somewhat within our border, have abandoned or neglected this system of stockading their villages, and unfortunately some of them have suffered severely; but no tribe within our border has attacked another so situated since April 1837.* Different clans of *Ku-mis* attack each other; there is a feeling of jealousy between clans of the same tribe living upon different streams, and those clans of *Ku-mis* living beyond the British frontier, consider those within as fair game. Their native arms for attack and defence are spears, bows, arrows, and square leathern shields, about three and a half feet long, by two feet broad. Even the most distant tribes now possess muskets and ammunition, which are conveyed up the *Kola-dan* by petty merchants, and thence passed from tribe to tribe far into the interior. They use poisoned arrows in the chase, but I think not in war.

One grand necessary of life—salt, the remote tribes have great difficulty in procuring. The *Ku-mis* of the *Kola-dan* procure it and salt fish from *Akyab*; among them it is plentiful. The tribe living higher up the *Kola-dan*, beyond the British frontier, receive a good deal from Cox's Bazar, through the *Khy-oung-thas*, living in the hills east of *Ramoo*. Some tribes further removed, and isolated by savage feuds, cannot procure salt at all times, so content themselves with an

* When a terrible slaughter was made of a *Khyeng* village on the *Le-myo*, by a *Kumi* chief of the *Kola-dan*.

alkali, which they have the ingenuity to obtain by the combustion of bamboo. Powerful outside clans frequently force supplies of salt and gunpowder from their inner and weaker neighbours.

The great art of war among the *Arakan* hill tribes is, to fall on the enemy by surprise. If they are discovered before reaching a village of attack, they effect a retreat. An open advance in day-light is utterly inconsistent with their ideas of warfare. Before starting on an expedition, they send trusty spies to ascertain the best mode of approach; numerous are the feasts and ceremonies practiced to propitiate the spirits of the mountain; then they march, four, five, or six days' journey, and burst upon the devoted village an hour or two before dawn. These attacks are sometimes made through revenge, the consequence of feuds existing for many years; but generally the great object is to take prisoners who may be made slaves, women, and children therefore are captured; the men are generally slaughtered without mercy; they would be too troublesome to keep. The prisoners are sold from tribe to tribe. I have sometimes been fortunate enough to recover *Khyeng* women and children, poor creatures who had been carried from their original homes amidst the *Yu-ma* mountains, about two hundred miles. This appeared a very world of distance to them, in a mountainous country, where communication is so difficult. The *Khyeng* women have their faces tattooed in a remarkable manner, and being the only tribe who follow this custom, they are easily recognized amidst other people.

I need scarcely remark, that none of the hill tribes are acquainted with the use of letters. A few words of their languages will be found in Appendix D. They are the same as those published in the "Comparison of Indo-Chinese languages," by the Rev. N. Brown of Sudya, in the *Journal of the Asiatic Society* for December 1837. Separate clans of *Ku-mis* and *Khyengs* differ from each other in their words for some objects.

On the tribe called "Lung-khe."

On the upper course of the river *Kola-dan*, and generally located to the west of that river, beyond the British frontier, there exists a tribe called by the *Ku-mis* and *Ra-khoing-thas*, *Lung-khe*. They

are sometimes called *Boung-ju* and *Boung-jwe*. It is this extraordinary variety of names given to one and the same people, that leads to so much confusion, and causes so much difficulty in attempting to classify the different tribes. Another difficulty is, the inability of these people to give any connected account of themselves. The most that can be done, is to treasure up what they incidentally let fall, and draw inferences from it; to gain a knowledge of them by direct questions is almost hopeless, for they will give different answers to the same questions day after day, not I conceive from any wish to deceive, but from ignorance, and inability to reflect.

In my inquiries concerning the *Lung-khes*, I learnt sufficient to make it appear probable, that the *Lung-khes* and *Boung-jwes* were originally separate tribes, who had been conquered and reduced to slavery by a third. Their present *toung-meng*, or chief, is named *Leng-kung*, and he describes himself as belonging originally to a very powerful tribe to the N. E. of his present seat; his clan in that tribe is named *Hlaing-ji-u*, *Hlaing-chou*, *Hling-ju*, and *Hleng-tchyo*.* Several generations back, a portion of his clan coming from the N. E. subdued the *Lung-khes* and *Boung-jwes*, and though still retaining intercourse with his ancestor's nation, yet his dialect, he states, has become changed. The nation from which he is descended, is called by the *Ku-mis*, *Tsein-du*, or *Shin-du*, a corruption probably of the clan-name *Hling-ju*, but as the *Ku-mis* use the term for the whole people, I shall adopt it with the same signification in this paper. I could not discover from the *Lung-khe* chief, that they had any generic name for the whole people. In speaking of the *Tsein-dus*, he used the term *Que-sak*, which he said signifies in his tongue, "upper people," or people living in the upper country; while he and those of his clan, who separated, as above described, are called by the *Tsein-dus*, *Que-tang* or *Que-plang*, i. e. "people living lower down;" referring either to the course of streams, or to the diminished elevation of the hills. The *Ku-mis* have a great dread of the *Tsein-dus*.

I must proceed to narrate how I first met the *Lung-khe* chief, for he formerly lived in independence beyond the British frontier.

* I heard these four pronunciations given for the clan-name, by *Leng-kung* and his brother.

In October 1838, the village of *Hleng-kreing*,* a powerful *Kumi* chief of the *Kola-dan*, was attacked by the *Lung-khes*. The attack took place in the dead of the night, and the surprise was complete. Between thirty and forty persons were killed in the village, and thirty-eight women and children were carried into slavery. This attack was headed by *Leng-kung*, a young man of 23 or 24 years of age. A party of the *Arakan* Local Battalion was sent in pursuit of the *Lung-khes*, but they abandoned their village, and fled with their captives into the hills, where it would have been useless to follow. In December of the same year, I proceeded up the *Kola-dan*, to make inquiries regarding the assailants, and found they had abandoned the site of their village, and gone westward with their prisoners, putting themselves under the protection of a *Kyoung-tha* family, living within the hill boundaries of the *Chittagong* district.† Being assured of this by persons whom I sent to ascertain the fact, I addressed the Magistrate of *Chittagong*, who recovered no less than thirty-three women and children that had been captured in *Hleng-kreing's* village; these were restored to their homes; one among them being the chief's daughter; two had been killed in retreat, and three sold to the *Tsein-dus*.

Shortly after their recovery, *Leng-kung* himself, and his elder brother *Leng-hung*, came down to *Akyab* to answer for their misdeeds. *Leng-kung* so far from denying that he headed the attack, gloried in it, averring, that "thirty years before, *Dha-boing-gyee* had attacked his tribe, killed a number of men, carried off several captive, and dug up his grandfather's bones,‡ plundering the grave of the various implements of war and state, which are always buried with a chief." This sacrilege the young man declared he had been brought up to avenge, and his eyes gleamed with delight as he told of his success! An elder brother accompanied him to *Akyab*, but the younger, from his superior energy and ability, possessed all authority in the tribe. From *Leng-kung* I

* This chief is generally called *Dha-boing-gyee*, a title of one of the officers of state under the *Arakan* kings, which he has assumed.

† This *Ky-oung-tha* family, the present head of whom is named *Thak-tang-phyoo*, emigrated from *Arakan* about 60 years since.

‡ The *Lung-khes* and *Tsein-dus* bury their dead, differing from the *Ku-mis* in this respect, who burn them.

learnt the following particulars regarding the *Lung-khes* and *Tsein-dus* :—

“ The *Lung-khes* subject to me, amount to three hundred houses ; they are all my slaves, except the immediate members of my family ; we live in bamboo houses like the *Ku-mis* ; we receive iron from the *Tsein-dus*, and salt from the *Ku-mis* ; our cultivation in the hills is *toung-ya* like theirs ; our language and that of the *Tsein-dus* is nearly alike ; we possess cows, pigs, goats, cats, and fowls ; we bury our dead ; the corpse is placed in a sitting posture, with a pipe in its mouth, food by its side, and *kung* ;* besides these a *moung*, (Burman gong,) sword and spear, together with the feathers worn in the hair by men of rank.

“ We worship four *Nats*, (spirits,) who are called *Que-sing*, *Sur-par*, *Put-ten*, and *Wan-chung* ; *Sur-par* is the head *Nat* ; he lives in the sky, and so do the others. There are cities in the sky where the dead men live ; there are many countries there, where trees bear food ready cooked, and clothes, and all things necessary. If men do not worship the *Nats*, when they sicken they die ; we worship once or twice a-year in the village, by sacrificing a buffalo, or pig, and drinking *kung* ; we do so to benefit ourselves, our wives, and children, and that no sickness may arise ; in the cultivation we have another sacrifice of goats and pigs to the *Nats* of the earth and water ; there are no names for those *Nats* ; for them we kill a fowl and throw it into the water, and leave meat or rice exposed on the ground. All men sacrifice for themselves, but we have *tsha-yas*, (instructors,) who at festivals are the first to bring the *kung*, and adjure the spirits. What they say I do not understand ; only a *tsha-ya*'s son can succeed him. They have nothing to say to marriages or funerals. In marriages, the father and brother of the damsel are presented with clothes, brass ornaments, cattle, &c. A great feast takes place. I (*Leng-kung*,) gave the value of thirty cows for my wife. A son can marry his father's inferior wife, after the father's death. A chief can marry as many wives as he pleases. When a woman of rank dies, a cow is killed and eaten, and the people drink and dance ; she is buried in a grave lined with stones, and sometimes valuables are buried with her ; not always ; we do not practice witchcraft, but other people around us do. A man's life when he dies,

* An intoxicating drink.

goes to the sky ; all men, whether good or bad, go there. Our fathers who have gone before, we see in dreams, and they see us."

I learnt from *Leng-kung* some particulars respecting the *Tsein-dus* nation. It consists of the following clans :—

- | | |
|------------------------|-------------------------|
| 1. <i>Tjin-dza</i> ,* | 8. <i>Ting-lhoul</i> , |
| 2. <i>Za-tang</i> , | 9. <i>Ti-a-dai</i> , |
| 3. <i>Keng-lot</i> , | 10. <i>Rul-bu</i> , |
| 4. <i>Lhon-shin</i> , | 11. <i>Boi-kheng</i> , |
| 5. <i>Til-teng</i> , | 12. <i>Chung-ngla</i> , |
| 6. <i>Rwol-lweng</i> , | 13. <i>Hlaing-ju</i> . |
| 7. <i>M'lhul</i> , | |

This last clan the *Lung-khe* chief originally belonged to ; there are still some villages of it, he said, remaining among the *Tsein-dus*.

The *Tsein-dus* observe the same ceremonies in burying their dead that have been mentioned above. Their country is very extensive, fifteen days' journey, my informant said, from one end to the other.† There are several hundred villages of them. The village sites are not moved periodically like those of the *Ku-mis* and *Lung-khes*, for much of their cultivation is in elevated plains, and comparatively broad valleys, which admit of continued cultivation ; they work with hoes or spades, not ploughs ; they have not so much cotton and rice as the *Ku-mis*, but a greater variety of vegetables, as yams, pumpkins, &c. They manufacture their own salt from brine springs existing in their country ; the salt, said my informant, "is like stone, white and somewhat bitter in flavour ;" to obtain it, they boil the brine in iron vessels, which they obtain from the province of *Yan* in Burmah. No salt is obtained from bamboo ; in fact my informant declared positively there were no bamboos in the *Tsein-du* country, a statement scarcely credible ; the houses are built entirely of plank ; the roofs are of plank for great men, but the poorer classes use grass ; men chiefly perform field labour ; the wives of very poor men only perform out-door work. The religious notions of the *Tsein-dus* correspond with those of the *Lung-khe* chief.

* The head of this clan is *Van-u*, whose sister named *Terh-rhal*, *Leng-kung* married.

† I have been informed that *Kumi* tribes bordering on the *Tsein-dus* have heard from them of white foreigners far to the North, to whom some of their clans paid tribute. The country these clans paid to, they called *A-syn*. It can scarcely be Assam ; they may probably mean Cachar. But it is certain that they are acquainted with the fact of Europeans having possessions to the north of them.

The *Tsein-dus* receive from the province of *Yan*, ponies and horned cattle. When *Leng-kung* and his brother first arrived at *Akyab*, they were dressed in handsome silks procured through the *Tsein-dus* from *Yan*. The former wore also a tiara of dark feathers, his distinguishing mark as chief.

Since writing the above, I have received accounts of the death of *Leng-kung*, supposed to have been caused by poison administered to him; such is the story of the hill people. Certain it is, however, that the *Tsein-dus* marched to revenge his death, and plundered a *Khyoung-tha* village on the *Chittagong* frontier in May last. Endeavours are now being made to recover the *Khyoung-tha* prisoners from the *Tsein-dus*. On the death of *Leng-kung*, his tribe dispersed; his imbecile brother will not be able to keep the people together, and they will probably become incorporated in other tribes.

I abstract from various Tables furnished to me by the author of the above interesting report—returns, as follow, showing the high progressive prosperity of *Arakan* within the few past years:—

The Revenues of Arakan were,

							Rupees.
In 1832-33,	...	...	...	...	...	...	2,48,569
1833-34,	...	...	...	...	...	...	2,80,301
1834-35,	...	...	...	...	...	...	3,10,168
1835-36,	...	...	...	...	...	...	2,87,016
1836-37,	...	...	...	...	...	...	3,26,293
1837-38,	...	...	...	...	...	...	3,35,731
1838-39,	...	...	...	...	...	...	3,80,287
1839-40,	...	...	...	...	...	...	3,79,809
1840-41,	...	...	...	...	...	...	2,79,697

Since 1837-38, taxes on forest produce, huts, boats, houses, sugar presses, handicraftsmen, bachelors, &c. &c. (which prevailed as part of the ancient revenue system of *Arakan*,) had been abolished to the extent of 97,349 rupees a-year; the beneficial effect of this measure is shewn in the enhanced revenue, and trade of the province. In 1834-35, the number of square-rigged vessels which cleared out from *Akyab* was 140; in 1840-41, it was 709; in the first named year the tonnage was 16,000 tons; in the last noted 82,111 tons. In 1834-35, rice to the extent of 4,25,040 maunds, valued at rupees 1,73,636 was exported from *Akyab*. The rice exports in 1840-41, were from the same port 26,54,298 maunds, and their value rupees 11,42,187. I have returns for the intermediate and some preceding years, but give these as years of fair comparison.

English.	Burmese.	Lung-khé.	Koladan Koo-mf.	Mee Koo-mf.	Kyó.	Lémyó Kyíng.	Doing-nak.	Mrúng.
Air,	lè,	hlé or khlé,	A-lí,	ka-lí,	Alí,	khyí,	bó,	nan-bá.
Ant,	paynetseik,	nghet-té,	Pa-leng,	ma-ling,	ma-tsí,	pa-lein-tsa,	—	—
Arrow,	myá,	lee,	tá-í,	tsa-kó-í,	—	khá,	lé,	lé.
Bird,	ngghet,	wá,	tó-ó,	ka-wá,	wá,	kó, hau,	—	hó.
Blood,	thwé,	atí,	t'hlí,	a-tí,	t'hlí,	a-tí,	—	—
Boat,	hlé,	laung,	p'laung,	mí-laung,	p'laung,	laung,	nó,	rúng.
Bone,	ayó,	a-rú,	a-hók,	a-kú-náng,	rú,	mwe-hau,	ar,	ba-kre,
Buffalo,	kyué,	ná,	pa-nó,	ma-ná,	cha-láwé,	nau,	mó-it,	ma-shí.
Cat,	kyanng,	sí-yó,	mí-yaung,	nim-bó-i,	mí,	mím,	bí-lá-í,	a-mí.
Cow,	nwá,	tchó,	tsí,	kha-bó-i,	char-rá,	shyá,	gó-rú,	ma-cháu.
Crow,	kyí,	lang-á,	úák,	m'kyí, & wá,	wut,	áng-ô,	ko-bá,	tuk-quá.
Day,	né,	sún,	kan-ní,	a-hóng-nát,	—	ta-ní,	dín,	tsa-ló.
Dog,	khwé,	wí,	wí,	ú-í,	bú-í,	ú-í,	kú-gúr,	tchái.
Ear,	ná,	huá,	kun-nó,	ka-ná,	ná,	hnó,	kán,	kúng-jú.
Earth,	myé,	w'lé,	ku-lóng,	lé-kóng,	ní,	teit,	—	—
Egg,	ú,	wat-tí,	ku-dú-í,	a-dú-í,	a-twí,	a-tú-í,	—	—
Elephant,	shen,	tsái,	kus-á-í,	ku-shá-í,	sang-hung,	mí,	—	—
Eye,	myetsé,	mik,	a-mí,	a-mí,	mé-tô,	mí-ú-í,	sóp,	ma-quá.
Father,	a-phé,	ká-phá,	Nga-á-í,	pha-á-í,	bá,	bó,	báp,	a-bhá.
Fire,	mí,	mé,	ma-í,	má-it,	—	mí,	a-gú-ín,	—
Fish,	ugá,	ngá,	ngó,	mwé,	ngwáu,	ngó,	máit,	a-á.
Flower,	pan-bwen,	pár,	ka-shong,	a-pá,	pá,	pa-pá,	—	—
Foot,	khyé,	ké,	a-kók,	a-kauk,	pát,	ashí,	teng,	ya-kóng.
Goat,	sheik,	kél,	mé-bé,	sú-bé,	ké-rát,	mé,	sa-gol,	pún.
Hair,	shaben,	tsám,	tchán,	a-sháng,	tchán,	sáng,	súl,	buk-ka-ná i.
Hand,	let,	kut,	kók,	a-kú,	quét,	kúth,	hát,	yák.
Head,	ghaung,	lú,	hlú,	a-lú-a-sán,	lú,	lú, lú-gú,	tsir-rá,	bó-kráo.
Hog,	wet,	wok,	áú,	áú,	wet,	wut,	sú-gur,	wá.
Horn,	khyo,	a-kí,	tug-gí,	a-tá-kí,	yu-é,	a-hyí,	—	—
Horse,	myen,	ráng,	kaung-ó,	ka-phúk,	shá,	tsá,	gó-ra,	go-rá.
House,	eíng,	eíng,	úm,	eíng,	ing,	eíng,	gur,	náo.
Iron,	than,	tír,	ta-mó,	ka-dáng,	ki-ying,	htí,	ló-á,	tchó.
Leaf,	yuet,	ting-nhá,	tchaung-ngam,	la-káng,	ting-ka-nú,	tein-tshoinghá,	—	—
Light, (dawn),	len,	qué-dé,	kú-wang,	kun-ní,	kwé-wá-tá,	a-wá,	—	—
Man,	lú,	má-nún,	kú-mí,	kú-mí,	ma-shí,	kyáng,	mo-rót,	tsa-lá.
Monkey,	myauk,	yaung,	kú-láit,	ka-lá-í,	ró-á,	yaung,	—	—
Moon,	lá,	hla-pá,	ló,	slú,	kyá,	khro,	thán,	tá.
Mother,	amé,	ka-nú,	na-o-í,	nwé-í,	núng,	nú,	má,	a-mó.
Mountain,	taung,	kláng, sláng,	mú-é,	ta-kúng,	hláng,	kón,	mú-rá,	lái.
Mouth,	uhók payát	a-ká,	la-banng,	úk-khá,	ma-kás,	a-hmaung,	—	—
Musquito,	khyeen,	mur-song,	chāng-rang,	kláng-tsá-áng	sa-nung,	hau-bau,	—	—
Name,	namé,	m'núng, a-míng,	a-mún,	náng-pá-mé,	—	ná hmé-ú,	—	—
Night,	nya,	yán,	wím,	ma-kúng,	kul-lók,	tseit-yón,	ráit,	hur-ró.
Oil,	tsí,	tsí,	a-tauk,	tsa-ting-twí,	chú-rúp,	tsí,	—	—
Plantain,	ngghet-pyo,	bal-lhá,	kút-tí,	kú-ti-teing,	kyá-lú,	hnám-bó,	ko-lá,	—
River,	myít,	tí-wá,	yáng-páng,	ta-ghá,	tí-póe,	han-laung,	gáng,	tei-bú.
Road,	lán,	lám,	lám,	láng,	lám,	láng,	—	làn.
Salt,	shá,	she-té,	pa-ló-í,	ma-lwé,	ma-tsí,	ma-tsí,	—	—
Skin,	tha-yé,	sa-win,	mó-e-pik,	a-múí,	mé-wan,	nau-wan,	—	—
Sky,	mó,	wán, wyn,	ka-ní,	quein-nú,	mí-tsúk,	né-bí,	—	—
Snake,	myué,	rúl, rúi,	pú-wí,	nia-quí,	mí-yúk,	pwá,	tsáp,	tsé-bú.
Star,	kyé,	ár fwí,	kus-shí,	a-sí,	ar-shí,	áá-shín,	ta-rá,	hán-dô-grí.
Stone,	khyauk,	lúm,	lóng-tchóng,	ka-lúng,	lúng,	lúm,	síl,	kú-laung.
Sun,	né,	ní,	ka-ní,	kan-ni-ta-lúp,	nè-tchú,	ko-nhí-ó	—	—
Tiger,	kyá,	tchek-kó,	tuk-káe,	ta-gá-ín,	kích,	kyé,	—	—
Tooth,	thwá,	há,	hó-ó,	a-phá,	há,	a-hó,	—	—
Tree,	thit-pen,	ting,	a-kúng,	ta-góm,	ting,	teíng,	gá-ít,	ba-páng-
Village,	yuá,	qwá,	a-wung,	wáng,	kó,	náng,	para,	—
Water,	yé,	tí,	tú-í,	tú-í,	tú-wé,	tú-í,	páoní,	tei.
Yam,	myák-khaung,	burch-rá-rátáung,	ho,	khá,	pát,	bwá,	a-lú,	htá.

Table of Proportional Logarithms. By Captain ROBERT
SHORTREDE.

The accompanying is a Table of Proportional Logarithms, which I have lately constructed with a view to diminish their size, and at the same time considerably extend their use.

Proportional Logarithms are commonly arranged in vertical columns of 60 each, and the construction is such, that the larger the Logarithm the less is the corresponding quantity. I have never been able to perceive any great benefit resulting from such a system, but often I have felt much inconvenience from the want of an arrangement analogous to that of Tables of common Logarithms.

The present is a specimen of what I conceive to be the most convenient form of Table. The Logarithms here given are the arithmetical complements of those in common use,* so that they increase along with the quantities to which they belong, and the arrangement is such, as to retain the advantages of the decimal as well as the sexagesimal subdivision. The Table was intended primarily to facilitate the finding of proportional parts for minutes and seconds, in a set of Tables in which the quantities were tabulated for every 10, and it was immediately obvious, that it would serve equally for seconds and decimals when the quantities are tabulated, as in Hutton's Tables, to every minute, and generally for any quantities whose subdivisions are by 6, 60, or 600, &c.

The column marked ' " contains minutes and even ten seconds from 1 to 9'.50. The col. marked N contains $\frac{1}{10}$ th of the seconds in the former; the odd integers being found in the head line of the Table exactly as in Tables of Common Logarithms. The column marked *common difference*, gives the mean value at the middle of the line opposite which it stands: and beyond this are proportional parts for the decimal subdivisions of the mean common difference.

The use of the Table is very simple. The fractional part of 10' or 1' being found in the proper column (' " or N, as the case may be) take out the corresponding Logarithm; to this add the log. opposite the Tabular Difference found by column N; the sum of these is the logarithm of a number which found in column N is the proportional part required.

* If the term Proportional Logarithms be considered as being already definitively appropriated otherwise, those here given may be called Co-proportional or Arco-proportional Logarithms, or Anti-proportional, or Proportial, or Correctional, or any other term which may be preferred.

Example.—The Table Diff. for $10'$ being 461, required the proportional part for $4' 10''$.

Opposite 4'.10" (column' ") is the logarithm,	6198
Opposite 461 column N. is	8855
	<hr/>
The sum is,	5053

The next less log. in the Table is 5051, corresponding to 192, and for the difference 2, the table of proportional parts gives $\cdot 1$, hence the whole proportional part is 192 $\cdot 1$.

Required the log. sin. and tan. of $22^{\circ} 27' 37''.3$, using Hutton's Tables.

For 37.3 Proportional Log. is,	7936	Tab. Diff. for tan.	3579	7936
For 3056 the Tab. Diff. for sin P.L.	7069			7756
	<hr/>			<hr/>
N 1899.6	5005	N 2225	1514	5692
Log. sin. 22° 27' = 9.581 9236		L tang.	616	
			<hr/>	<hr/>
Log. sin. 22° 27' 373'' = 9.5821 135.6			9.616	3739

It very often happens, that the correction for 2d difference is omitted, though it may be sufficiently large to affect the result. To make this correction as little troublesome as may be, I have prefixed a set of decimal factors, which multiplied by the second difference will give the correction to be applied, with a sign opposite to that of the 2d difference. For example in Hutton's Tables, the log. sin. of $22^{\circ} 27'$ has a 2d difference of 3. The coefficient for 2d difference at 37.3 is .119, this multiplied by 3 is .357 or .4; which *added* to the result above found, gives 9.5821136 as the log. sin. of $22^{\circ} 27' 37''.3$.

The Table here given has no indices. The want of them may be supplied by the following Rule. When the fractional part of $10'$ for which proportion is required is between $10'$ and $1'$ the result is greater than $\frac{1}{10}$ of the Tabular Difference, when between $1'$ and $6''$ the result is between $\frac{1}{10}$ and $\frac{1}{100}$ of Tab. Diff.

When the Tab. Diff. is for $1'$, then between $1'$ and $6''$ the result is greater than $\frac{1}{10}$ of the Tab. Diff. and similarly in other cases.

P.S.—In using this Table to find the Logistic Log. for 1 hour, the fractional interval is to be reduced to decimal of minute, and found in column N.; the Logistic Log. is the arithmetical complement of the rithm in the Table. And similarly, if the whole term be 3 hours,

reduce as above and divide by 3. Also for 12 hours, reduce to decimal of hours and divide by 2 (for 24 hours divide by 4); the qualities being thus brought into tenths of hours, col. N. will serve as before, the arithmetical complement of the Tabular Log. being the Proportional Log. of the usual sort, to which apply if need be, the proper index.

R. S.

Coefficient for ∇ 2.	Proportional Logarithms for 10 minutes : as also for 1 minute, or 1 degree, or 1 hour.											Common Difference.	Proportional Parts.								
	N.	0	1	2	3	4	5	6	7	8	9		1	2	3	4	5	6	7	8	9
.045	1-00	6	0000	0072	0142	0212	0280	0348	0414	0479	0544	67	7	13	20	27	34	40	47	54	61
.052	10	7	0669	0731	0792	0852	0911	0969	1027	1083	1139	58	6	12	18	23	29	35	41	47	53
.058	20	8	1249	1303	1357	1409	1461	1513	1563	1614	1663	52	5	10	16	21	26	31	36	41	46
.064	30	9	1761	1809	1856	1903	1950	1996	2041	2086	2131	46	5	9	14	18	23	28	32	37	42
.059	40	10	2218	2262	2304	2347	2389	2430	2472	2512	2553	42	4	8	12	17	21	25	29	33	37
.075	50	11	2632	2672	2711	2749	2788	2825	2863	2900	2937	38	4	8	11	15	19	23	27	30	34
.080	2-00	12	3010	3046	3072	3118	3153	3188	3222	3257	3291	35	3	7	10	14	17	21	24	28	31
.085	10	13	3358	3391	3424	3457	3490	3522	3554	3586	3617	32	3	6	10	13	16	20	23	27	30
.089	20	14	3680	3711	3741	3772	3802	3832	3862	3892	3921	30	3	6	9	12	15	18	21	24	27
.094	30	15	3979	4008	4037	4065	4094	4122	4150	4177	4205	28	3	6	8	11	14	17	20	23	25
.098	40	16	4260	4287	4314	4340	4367	4393	4420	4446	4472	26	3	5	8	11	13	16	19	21	24
.102	50	17	4523	4548	4574	4599	4624	4649	4674	4698	4723	25	3	5	7	10	12	14	17	20	22
.105	3-00	18	4771	4795	4819	4843	4867	4890	4914	4937	4960	24	2	5	7	10	12	14	17	19	21
.108	10	19	5006	5029	5051	5074	5097	5119	5141	5163	5185	22	2	4	7	9	11	13	16	18	20
.111	20	20	5229	5250	5270	5293	5315	5336	5357	5378	5399	21	2	4	6	8	11	13	15	17	19
.114	30	21	5441	5461	5482	5502	5523	5543	5563	5583	5603	20	2	4	6	8	10	12	14	16	18
.116	40	22	5443	5463	5482	5502	5521	5540	5560	5579	5598	19	2	4	6	8	10	12	14	16	17
.118	50	23	5836	5855	5873	5892	5911	5929	5948	5966	5984	19	2	4	6	8	9	11	13	15	17
.120	4-00	24	6021	6039	6057	6075	6092	6110	6128	6145	6164	18	2	4	5	7	9	11	12	14	16
.122	10	25	6198	6215	6232	6250	6267	6284	6301	6318	6335	17	2	3	5	7	9	10	12	14	15
.123	20	26	6368	6385	6402	6418	6435	6451	6467	6484	6500	16	2	3	5	7	8	10	12	13	15
.124	30	27	6532	6548	6564	6580	6596	6612	6628	6643	6659	16	2	3	5	6	8	10	11	13	14
.121	40	28	6690	6705	6721	6736	6752	6767	6782	6797	6812	15	2	3	5	6	8	9	11	12	14
.125	50	29	6842	6857	6872	6887	6902	6917	6931	6946	6961	15	1	3	4	6	7	9	10	12	13
.125	5-00	30	6990	7004	7019	7033	7047	7061	7076	7090	7104	14	1	3	4	6	7	8	10	11	13
.125	10	31	7132	7146	7160	7174	7188	7202	7215	7229	7243	14	1	3	4	5	7	8	9	11	12
.124	20	32	7270	7284	7297	7311	7324	7337	7351	7364	7377	13	1	3	4	5	7	8	9	10	12
.124	30	33	7404	7417	7430	7443	7456	7469	7482	7495	7508	13	1	3	4	5	7	8	9	10	12
.123	40	34	7533	7546	7559	7571	7584	7597	7609	7622	7634	13	1	3	4	5	6	8	9	10	11
.122	50	35	7659	7672	7684	7696	7709	7721	7733	7745	7757	12	1	2	4	5	6	7	9	10	11
.120	6-00	36	7782	7794	7806	7818	7830	7841	7853	7865	7877	12	1	2	4	5	6	7	8	10	11
.118	10	37	7901	7912	7924	7936	7947	7959	7970	7982	7993	12	1	2	3	5	6	7	8	9	10
.116	20	38	8016	8028	8039	8050	8062	8073	8084	8096	8107	11	1	2	3	5	6	7	8	9	10
.114	30	39	8129	8140	8151	8162	8173	8184	8195	8206	8217	11	1	2	3	4	6	7	8	9	10
.111	40	40	8239	8250	8261	8272	8282	8293	8304	8314	8325	11	1	2	3	4	5	6	8	9	10
.108	50	41	8346	8357	8367	8378	8388	8399	8409	8420	8430	10	1	2	3	4	5	6	7	8	9
.105	7-00	42	8451	8461	8472	8482	8492	8502	8513	8523	8533	10	1	1	3	4	5	6	7	8	9
.102	10	43	8553	8563	8573	8583	8593	8603	8613	8623	8633	10	1	2	3	4	5	6	7	8	9
.098	20	44	8653	8663	8673	8683	8692	8702	8712	8722	8731	10	1	2	3	4	5	6	7	8	9
.094	30	45	8751	8760	8770	8779	8789	8799	8808	8818	8827	10	1	2	3	4	5	6	7	8	8
.089	40	46	8816	8855	8865	8874	8884	8893	8902	8912	8921	9	1	2	3	4	5	6	7	7	8
.085	50	47	8939	8959	8968	8977	8986	8995	9004	9013	9022	9	1	2	3	4	5	6	7	7	8
.080	8-00	48	9031	9040	9049	9058	9067	9076	9085	9094	9103	9	1	2	3	4	5	6	7	7	8
.075	10	49	9120	9129	9138	9147	9156	9165	9173	9182	9191	9	1	2	3	4	5	6	7	7	8
.069	20	50	9208	9217	9226	9234	9243	9251	9260	9269	9277	9	1	2	3	4	5	6	7	7	8
.064	30	51	9294	9303	9311	9320	9328	9337	9345	9353	9362	8	1	2	3	4	5	6	7	7	7
.058	40	52	9379	9387	9395	9404	9412	9420	9428	9437	9445	8	1	2	3	4	5	6	7	7	7
.052	50	53	9461	9469	9478	9486	9494	9502	9510	9518	9526	8	1	2	3	4	5	6	7	7	7
.045	9-00	54	9542	9550	9558	9566	9574	9582	9590	9598	9606	8	1	2	3	4	5	6	6	7	7
.038	10	55	9622	9630	9638	9646	9654	9661	9669	9677	9685	8	1	2	3	4	5	5	6	7	7
.031	20	56	9700	9708	9716	9724	9731	9739	9747	9754	9762	8	1	2	3	4	5	5	6	7	7
.024	30	57	9777	9785	9792	9800	9808	9815	9823	9830	9838	8	1	2	3	4	5	5	6	7	7
.016	40	58	9853	9860	9868	9875	9883	9890	9897	9905	9912	7	1	1	2	3	4	5	6	7	7
.008	50	59	9927	9934	9942	9949	9956	9964	9971	9978	9985	7	1	1	2	3	4	5	6	7	7

Memorandum on Nurma Cotton. By H. PIDDINGTON, Esq.

A very fine silky cotton having been sent to the Secretary of the Asiatic Society, Mr. Torrens, with some other productions from Khorassan, I find on reference to the Transactions of the Agricultural Society, that it is well known in Malwa. Believing it to be of importance that this cotton should have a trial under the American experimentalists, I have ventured to suggest that seed* should be procured in Malwa, and dispatched to Captain Bayles without delay.†

It is also of great importance to obtain specimens of the *soils* in which the Nurma cotton is grown in Malwa; and from the experimental cotton farms, so as to ascertain their identity, or to see what manure may be required. I take the liberty then of subjoining the following queries and directions:—

1. What is the Nurma cotton in Malwa? Is it the common cotton of the country; or a choice sort?
2. Does it grow on any common cotton soil? or are peculiar soils and spots sought out for it?
3. What manure (if any) is used to it?
4. When sown? How sown? When harvested? How cleared?
5. What price does the best sort command? Where is it exported to, if at all?
6. Is it an annual cotton? or does it last more than one year?
7. If it grows on *any* cotton soil, please to select specimens from a couple of the best fields you can find out; if from any peculiar sort of soil, such as red, or white, or black, then form all the sorts.
8. If from a peculiar soil, a specimen of the surrounding common soil of the country would be desirable.
9. Specimens of the soils should be sent as follows:—
 - a. For sending by dawk-banghy, a large tin wafer-box for each sort is the handiest package; but a larger quantity should be taken to furnish samples to Museums, Societies, &c. This may be sent afterwards.

* Seed of Nurma from Herat, procured by me, is now on its way to Captain Bayles.

† I am assuming here that he is not acquainted with it.

b. Scrape off two or three inches of the soil with the hand, and take your specimen also from the field before any manure has been laid on. The soil at two or three inches deep may pretty nearly be called surface-soil; unless, as in rare cases, it changes at this depth. One specimen should be taken here and another at eighteen inches deep.

c. If any rocks or stones are lying about the fields, these should be sent separately. The same of those below at eighteen inches or two feet deep.

d. The soil should be dried on a hot-water plate, or in a hot sun, that it may not rot the labels.

e. A label should be inclosed *within* the box, and it should also be numbered, so as to refer to a list. The box should also be marked *outside* in ink or paint, on the side, and lid.

f. If the manure used be any kind of earth or stone, samples of it should be sent also.

10. Inquiry should be made if at the time of ripening any peculiar manure is added, as with some of the choice sorts of tobacco. If the plants are *topped*, *i. e.* the young shoots pinched off, or beaten with sticks, or allowed to be eaten down by animals. All these processes are used in various parts of the world, (America, the French and Spanish Colonies, Persia, &c.) and no doubt influence both the productiveness and the quality of the cotton to a great extent.

11. Nothing relative to the native methods of culture, irrigation, &c. should be overlooked.

12. Inquire if it is subject to any diseases or insects, which seriously affect the returns from it.

13. The amount of return in clean merchantable cotton per biga; if a known number of square yards, is of importance; and the average price of the best sorts.

Specimens of the soils are requested for the Museum of Economic Geology now forming; and I shall be glad to afford any assistance in the investigation of their qualities which may be desired.

H. PIDDINGTON.

Calcutta, 31st August, 1841.

P.S.—Since writing this, I learn from Mr. Grant, that the Nurma cotton is so highly prized in Malwa, that the rajahs and great persons will wear no garments, but such as are manufactured from it. He

adds, that Mr. Bruce, now in Bundelcund, can give every information relative to it.

The Persian name *Nurmah*, (*Nurm*, "soft,") being applied to a similar article both in Khorassan and in Malwah, would seem to go far to induce the belief, that the Pathan conquerors of the latter country must have introduced this peculiar cotton into the country they subjugated. The fact is worth noting, as it is not often that disproof of so positive a character can be adduced against the common assertion,—that the Mussulman conquerors of India came rather to destroy totally, than to improve by even partial means.



Report on some Articles of Trade sent by Lieut. POSTANS from Khorassan. By H. PIDDINGTON, Esq.

I. *Guljuleel*.—This is evidently the yellow flower of a plant. It is however so broken up, that I could with difficulty pick out a few entire flowers for sending to Dr. Wallich, whose severe illness has hitherto prevented my obtaining any reply. He thinks them the flowers of a *Delphinium*.

It is stated to be used for dyeing green, of course with indigo. I find that with the common aluminous mordant, it dyes silk and wool a very handsome canary yellow, as per margin; which with indigo becomes a very good green.* Having but very little of it, I did not experiment further, because I thought it might be better to send it home. The yellow resists coarse soap and water well.

In sending it, or any future sample home for trials, great care should be taken to pack it dry. I found that exposed in paper it absorbs moisture very rapidly, and had a slight mouldy smell, so that I was obliged to dry and keep it in a stoppered bottle.

II. *Bhoj-ghund*.—This is, I think, a new sort of galls. It is widely different in shape and appearance from ours, being a small pyriform brown capsule, much resembling a miniature dried pear; it is hollow and empty, the shell being of a gummy elastic consistence, wholly differing from the Aleppo gall.

* It has no affinity to Cotton.

As our sample is no doubt a bazar, or even a work-shop sample, we may take it to be one at maturity, at least in the best state for use.

I find that it gives a nearly colourless infusion and a tincture, which does not become deeper than of a Lisbon-wine colour. This last is a very valuable property in using it as a chemical re-agent, in which the dark colour of the tincture of common galls sometimes renders it an equivocal test.

I find, by experiment, that its delicacy is fully equal to that of the best Aleppo galls; and the exceeding small portion of extractive matter which it contains, will I think render it of much value in fine dyeing. I have found that it is procurable in the bazars of Calcutta, under the name of *Pistach-ka-fool*,* (Pistachio flowers,) and that it is brought from the Red Sea and Gulf of Persia by the Arab ships, no doubt for the use of fine dyeing operations. This name would lead us to suppose, that it was the gall-nut of the Pistachio tree, (perhaps of the wild Pistachio? *Pistacia terebinthus*?) Its price in our bazar is too high to allow it to be used extensively, but this is probably, as with many other articles of small consumption, owing to the little demand: three rupees per seer was the retail price. Those which I obtained were very old, and were worm-eaten. I am looking out for some new ones, when I can ascertain the quantities of tannin and gallic acid, should we learn upon reference home, that as I suppose, they would be valuable in the arts.

III. *Gum from various trees, principally the Almond.*—This gum seems to hold a middle place between gum arabic and the common cherry-tree gum; and may possibly be of value if well picked, for the market value of gums depends very much on this process. It softens much in damp weather, but dissolves entirely in cold water, having the solution slightly turbid, though quite colourless; which is a great object in the use of gums in dyeing. It should by all means be sent home for trial.

IV. *Nurma Cotton.*—I had occasion, about a year and a half ago, to assert in print, that “the indigenous cottons of India were very little known to us,” and here is an example of the truth of the assertion. This is a very beautiful silky cotton, of which I should think very

* Or Pistach-ka-fol, Pistachio fruit?

highly, and it is sent to us from Khorassan as a novelty. Now I find that (vol. iv. p. 218,) in the Transactions of the Agricultural Society, is a letter under date 12th April 1837, from J. W. Grant, Esq. referring to this very Nurma Cotton, *as having been grown in Malwa from time immemorial!* It is there compared, in two notes, first to the Sea Island, and then to the Upland Georgia. The fact is, that it has the silky fibre of the Sea Island, and the woolly adherence to the seed of the Upland. It more resembles the fine Manilla cotton, which is always worth a shilling a pound, than any other I can compare it to. The Manilla cotton has like it, the woolly seed.

Ours are perfectly fresh, and Dr. Spry has promised me to send them to Captain Bayles. I have two plants growing in my garden, but I suggest that it may be of much importance to procure a quantity of the seed from Malwa, for the Cotton Experiment-farm, with some of the soil it is grown upon, and some of these of the best spots for cotton about the Cotton Experiment stations. By comparative analysis of these, we shall be certain that if it does not succeed, it will be owing to climate, and we shall go to work safely as far as soil is concerned. I add a separate memorandum, that no time be lost in procuring the seed and soil for the approaching season. If samples of the soils are sent to me, I shall be glad to give any assistance I can in the matter.

V. *Musagh, Walnut-tree bark.*—The use of this at home in dyeing, staining of wood, paper, &c. are so well known, that I have not thought it worth while to experiment upon it.

H. PIDDINGTON.

Museum, 24th August, 1841.

Note on the Cervus Elaphus (?) of the Sâl Forest of Nepâl. Hodie, C. Affinis, nob. By B. H. HODGSON, Esq.

Many years ago, I announced the existence of the true Stag of Europe in the saul forest of Nepal, upon the strength of a skull and horns in my possession, of which I afterwards published an illustrative sketch in the Journal, giving those of the Sambur or Jarai, and of the Baraiya or *Elaphoïdes*, for comparison; and observing that the latter species and *Wallichii* seemed to form two distinct links in the chain of connexion between what H. Smith regarded as typical Stags of Europe and of Asia, (*Elaphus* and *Hippelaphus*.) It has lately been asserted, however, that I have confounded the common Stag of Europe, of which there is alleged to be no analogue in India, with *C. Wallichii*;* and, again,† that *C. Wallichii* is really no other than that analogue; there being no grounds for supposing the existence of a third species liker to the Red Deer of Europe than either Wallich's Stag or the Baraiya, which last is pertinaciously called *Du Vaucellii*, despite the explanation afforded long ago in the Journal. I will not enter into discussion with my critics: and I must admit that I have never been able to obtain, or to see, a second specimen of Wallich's, or of the true Stag. Neither do I profess to have lately obtained any new lights as to the leading principle upon which, following H. Smith, I distinguished the several species of *Cervus*, viz. the number and position of the antlers,‡ especially the inferior ones. I too, therefore, may still have my doubts, though they are not precisely those of my critics; for I feel satisfied that there is a Stag in India distinct from the Sambur or Rusa, from Wallich's, and from Du Vaucel's, and nearer allied to the Red Deer of Europe than any of them; and the accompanying sketch and dimensions will, I think, satisfy most persons that such is the fact:—

* Ogilby, apud Royle.

† Blyth, apud Proc. Zool. Soc., 1840, p. 79.

‡ That is, the basal and median, for the upper are said to be more liable to mutability. The true Stag has three of them (directed forward) on each beam, two of which are basal, and the third a median, or royal. Wallich's has two basal and no median: the Baraiya one basal, and no median, but a crown of many snags at the summit, like our Red Deer, but like no other Indian Deer: the Sambur and Axis have one basal, no median, and one subterminal antler.

Dimensions.

	<i>Inches.</i>
<i>Skull</i> .—Extreme length, along the curve, to upper edge	
of foramen magnum,	22 $\frac{1}{2}$
Do. do. to central jut of transverse crest,	19 $\frac{1}{2}$
The same, by <i>rectilinear</i> measure, like all the measures	
that follow,	17 $\frac{1}{2}$
Symp. maxill. to anteal base of the horn,	14
Symph. maxill. to tips of nasals,	3 $\frac{1}{4}$
Length of the nasals,	6 $\frac{3}{4}$
Greatest breadth of nasals,	2 $\frac{3}{8}$
Length of frontals,	5 $\frac{1}{4}$
Greatest width of do., between outer edges of orbits, ...	7 $\frac{1}{2}$
Greatest width between outer edges of molar teeth, ...	4 $\frac{3}{4}$
Greatest width of occiput,	5 $\frac{7}{8}$
Greatest depth of do. from mesial point of crest to infe-	
rior edge of condyle of foramen,	4
Length of the intermaxillaries,	5 $\frac{1}{8}$
Greatest width between them,	3 $\frac{1}{4}$
Greatest height of skull from frontal crest to inferior, or	
coronal, edge of first molar tooth,	8
<i>Horns</i> .—Greatest length, along the curve,	54
Girth above the burr,	10 $\frac{1}{4}$
Girth between 1st and 2nd basal antlers,	10 $\frac{1}{2}$
Greatest divergency between <i>outer</i> terminal snags, ...	47
Interval between <i>inner</i> terminal snags,	26 $\frac{1}{4}$
Length of the basal antler,	12
Length of the median antler,	8
Length of the superior (outer) antler,	10
Nearest basal interval of the horns,	4

The spoils above measured belonged to an animal of moderate age, being rather young than old, as is proved by the distinctness of the cranial sutures, and of the coronal processes of the teeth; and, by comparison with the skulls of several mature and large specimens of the Sambur or Jarai, I find the skull of the above to exceed them in size in the proportion of about an eighth, whilst the horns surpass the finest specimens of those of the Sambur by two-fifths. The skull is further



Stag of the Saul forest
Cervus Affinis
 $\frac{1}{4}$ Nat Size



Anomalous *Rusa*.
 The Kato Jaraï of Nepal.
 $\frac{1}{4}$ Nat Size
C. Heterocerus nob.

distinguished from that of the Sambur, by greater elevation of the frontals, between the bases of the horns, and by a proportionally greater dip across the forehead above and between the orbits; by superior saliency of the orbits, and by their more advanced position in relation to the entire length of the skull; by broader nasals, less arched in their length; by wider intermaxillaries, leaving a larger nasal cavity; and, lastly, by suborbital pits of considerably less size. Of the Baraiya, again, the skull and horns, in proportional size, fall fully as much (and more) short of the present animal, as do those of the Sambur or continental type of Rusa; and if, in reference to such *details* as those just indicated, although there is more resemblance here than before to our subject in the frontal or cerebral portion of the cranium, there is even less in the facial portion, which is singularly compressed and attenuated. The horns of the Baraiya, by their pale hue and smooth surface, as well as by the more forward direction of the basal antler, and the greater reclination of the beam, more nearly approach those of our animal than do the horns of the Sambur. But still they differ by a vast interval in point of size,* as well as in the technical characters of having but one basal snag, no median, and several (four to five) terminal ones. All three skulls are distinguished by canine teeth; but they have no other similar and literal resemblance. Of *Cervus Wallichii*, I have no specimen either of the skull or of the horns; but I have a clear general recollection of the original specimen in the live state; and, with the utmost allowance for the (supposed) effects of decrepitude, I cannot perceive any means of thus soundly accounting for the deficient royal antler, or for the vast inferiority in size, nor, therefore, of identifying *Wallichii* with our present subject.

This animal, as it appears to me, very remarkably resembles the Stag of Europe in almost all the characters of the skull and of the horns, leaving indeed, as distinctive peculiarities, only superior size in the horns,† and the simple Sambur-like bifurcation of their tips. Greater age might possibly have given to our animal the full crown of

* The largest horns of the Baraiya I have measured, were but 34 to 36 inches long by the curve: nor are the largest Sambur horns longer; whereas the horns of our Stag measure no less than 54 in.

† H. Smith, apud Cuvier, gives the dimensions of the horns of a European Stag that were considered enormous; yet they fall short of the size of those of our animal.

snags distinguishing the Red Deer of Europe; and, if so, I should incline to my old opinion, and regard the difference between the two animals as merely a variety. But, on the other hand, the noble horns of our present subject seem so fully developed, and his age so far from juvenile immaturity, that we may reasonably suppose these horns to exhibit the normal form; and, in that case, the species will be distinct from *C. Elaphus*, and may be called *C. Affinis*, from its extreme affinity thereto. The pedicles are tolerably elevate; the burrs rather small; the two basal antlers of each beam of equal size, nearly straight, and so forward in direction as to overshadow the face to the end of the nasals: these basal antlers are larger than the royal, and even than the terminal antler, and are put off from the anterior side of the beam, one above the other, with an interval of about inches two and a half, the beam continuing as thick there as it is close above the burr, where the lower antler divaricates. Having put off these basal snags, the beam reclines considerably, and in the style of *Axis* thirteen inches, and then gives off the median snag from the antea aspect as before, but with a more upward direction. A foot higher is the terminal fork, the prongs of which radiate laterally and equally from each other, so that it is difficult to say which is the beam and which the antler; more especially as the inner prong (so to speak) of this fork is the longer, though slighter, and the outer one the thicker, though shorter. We now leave our "true Stag of the saul forest," or *Cervus Affinis*, nob, to the discretion of the European Master of Museum and Library. Specific character (?) *C. Affinis*, Stag of India, very closely affined to the Red Deer of Europe. Horns very ample, pale, smooth, rounded, having two basal antlers and one median directed forwards from each beam, but the crown simply forked as in *Rusa* and *Axis*; standing in a natural arrangement between *Elaphus* and *Wallichii*, but larger than either.

B. H. HODGSON.

Nepal, June, 1841.

Notes and Observations, in continuation, from DR. WALKER, Madras Medical Service, on a tour in H. H. the Nizam's Territories.

On the evening of the 25th of April I left Chinnore, and reached Khummamait on the 3d of last month.

Until within thirty miles of Worungul, the sandstone remained the surface rock, but, at this point, the sienite appeared, with its characteristic tors and logging stones, and continued so all the way to Khummum. The various trees mentioned in former reports were seen in abundance, particularly in the sandstone country, the greater portion of which is covered by them, forming, in many parts, a dense forest. The granitic country, on the other hand, although sufficiently well wooded, is, throughout, a much more open country, the tree vegetation being neither so various, nor so luxuriant, as that of the former.

The Circar of Khummamait, differs in scarcely any of its cultivated productions from that of Worungul. The dry grains and legumes of both are identical, and there is scarcely a variety of rice cultivated in the one, that is not grown in the other. Of the garden produce, Turmeric alone, (*Curcuma Longa*,) would appear to be exclusively cultivated at Khummum.

Mineral productions.—Iron ore, of the kind mentioned in the first report, occurs in the neighbourhood of Khummum, even more abundantly than at Hunnumkoondah. In preparing the iron, the great fault observed in the process, is, the little care bestowed in pounding the ore ; the workmen, instead of reducing it to a fine powder, as is done in Sweden, content themselves by breaking it into pieces about the size of a hazel nut. Much additional labour, and an unnecessary expenditure of fuel, are the consequences of this error.

The garnet mines of Gopulrowpet, described by Dr. Voysey, are situated to the north-east of Khummum, towards the Godavery, distant about seventy miles. According to his description, which would appear to be found in the alluvium, composed of the debris of a rock of garnetic granite ; specimens are sent of the garnets ; which are mined and exported in their rough state to Hyderabad on the Coast, where they are cut.

Animal productions.—A considerable quantity of deer and buffaloe's horns, the former brought from the jungles, is sent from Khum-

mun; their usual price there being about a pice each; the wool produced is manufactured into *cumbuls*, which are also exported. The demand for hides, for agricultural purposes, in the Circar is quite equal to the supply.

The *Mylabris Cichorei*, possessing blistering powers superior to those of the Spanish fly imported from Europe, is abundant throughout the granitic country, from the middle of June till December, and may be gathered for about a rupee a pound.

Vegetable productions.—The *Sansevieria Zeylanica*, the *Ishnia Codanar* of the Telingas, and the *bowstring hemp* of Roxburgh, is a very abundant production, both in the Worungul and the Khummum Circars. Its useful properties are unknown to the natives, who turn it to no account. Dr. Roxburgh proposed the cultivation of this plant for the hemp which it affords, and the strength and tenacity of its fibres, rivalling, which if not excelling, those of its congener and closest ally, the *Phormium Tenax*, (New Zealand flax,) render it remarkable that his proposal should never have been, as far as I am aware, adopted. It is probable, however, that the proneness to nip and rot, when exposed to moisture, is common to the fibres of all monocotyledonous plants; should such be the case, we must prefer seeking for hemp plants in the exogenous class. In addition to the medicinal plants mentioned in the former report, I may here add the *Cucumis Colocynthis*, the true Colocynth, the *Asclepias Asthmatica*, the country Ipecachuana, the *Ipomoea Cœrulea*, the seeds of which have been proposed by Dr. O'Shaughnessy as a substitute for Jalap,—all common plants, and also the *Casalpinia Bonduca*, *Gentiana Verticillata*, and some other medicinal plants less known and appreciated,—as several species of *Euphorbiæ* and *Asclepias*, the *Aschynomene grandiflora*, *Pavetta Indica*, &c.

Manufactures, &c.—Calico printing is practised at Khummum; but it would appear to be a feeble off-set from the art pursued at Madappollam and Masulipatam, from whence the printers have originally come. The printing is confined to two colours, black and red; the former obtained from a mixture of gum, myrobolan, and sulphate of iron; the latter from the root of the *Morinda Citrifolia*. The printing blocks, composed of teak-wood, are procured from Masulipatam, and there is little variety or beauty in the patterns; the cloths printed are usually coarse surrhees and handkerchiefs. Hand-fans from the leaf of the

Borassus Flabelliformis are manufactured at Khummum, and also a coarse kind of toys. Two of the exports from this Circar are rather remarkable; viz. plates from the leaves of the Pallas tree, (*Butea Frondosa*,) which are sent to the Coast, and kingfisher's feathers, which are purchased by Burmese agents, to be sent to Ava.

Having brought to a conclusion all the information I have been able to collect, regarding the productions of the three Circars of Worungul or Hunnumkoonda, Chinnore or Ramghur, and Khummum, I shall now proceed to give some general observations on the inhabitants, their conditions and diseases, communications, &c. Although, strictly speaking, what follows is applicable to that part of Telingana which is included in a triangle having a point on the Purmeetah river, a few miles north of Sevoucha, for its apex, and a line drawn from Hyderabad to Khummum for its base, yet the greater number of the remarks will be found applicable to a much more extensive range of that country.

The natural division of this country is into the sandstone and granitic. The former is composed of a belt, of various extent, on each side of the Godavery, while the latter is the great formation of the country. Considering how much the causes that modify or determine the character of a people depend on the geological structure of the country they inhabit, I think it as well to state this division *in limine*, as I shall have frequent occasion to refer to it. I regret that I cannot give a very accurate account of the breadth or extent of the former, but, in the plain which I visited to the south of the Godavery, its depth was from twenty to fifty miles from the river, although in many parts it sends out processes covering the granite to a much greater distance.

Inhabitants.—The great majority of inhabitants, perhaps three-fourths of the whole, is composed of Telingana peasantry. This class is readily known by their spare form, dark complexion, and a certain air of subjection impressed by their occupation. They appear a contented race, with less spirit and enterprize than the Mahratta cultivator, but superior to the Bengalee in courage and activity, as is proved by their reputation in the ranks of the Madras army. The indifference to better their condition, and to rise in the world, common to agriculturists in most parts of the world, is fully possessed by the ryots of Telingana.

Brahmins.—If we are to judge of this puzzling caste by common tests, there is much reason, from the striking diversity of feature and

complexion, to pronounce the Telingana Brahmins a mixed race. The *poojarees* wear no turbans, and daub their countenances with paint to a much greater extent than is the custom to the westward. Many Zemindars are Brahmins.

Aylmas.—This is a caste peculiar to Telingana; they affect for themselves a high descent, which however is denied by the other castes, who assert that the *bhaats* (bards) sung them into repute from a very humble origin; they are respected and feared throughout the country, as gallant soldiers, and dangerous enemies. They seclude their women, a practice in all probability derived from the Moosulmans, and which would seem to give countenance to their being but newly sprung up. Several of the Khummumait and Worgungul Zemindars are of this caste; they are a well-made, rather a good-looking, set of men, very fond of the chase and of all active exercises.

Mahomedans.—With the exception of troops, Government employés, and a few tradesmen, there is scarcely a Moosulman in the Telingana country. I, of course, leave the city of Hyderabad out of the question.

Bedurs.—This race, or rather tribe, is found chiefly in the Chinnore Circar, where they take the place of the *Dhurs*, and act as a sort of Gibeonites to the Brahmins and higher castes. Their chief, it is well known, resides at Shorapoor; they are an industrious, contented class, of a darker hue, perhaps, than the Telingana *Coombees*, but with scarcely any other distinguishing mark.

Goands.—It has been customary to consider this people as the aborigines of India: If, by this, it is meant that, as far as records go, they have been what they now are, there is little to be objected to the term, although one that is less decisive ought, in our ignorance, to be applied; but, if it is assumed from any fancied absolute difference in their physical appearance from the inhabitants of the plain or cultivated districts, it is positively to be rejected, as leading to error. It is said that they are a dwarfed, stunted race; but an under-fed, oppressed people, with limited resources, will become so in the course of a few generations. Their not professing Hindooism is surely, with the history of religion before us, no argument that they must be necessarily distinct and separate; nor is their peculiar language (if peculiar it be) a better proof. None of the marked distinctions of form, feature, shape of head, character of hair, by which different races are characterized,

are observed to exist between the Goands and the Telingee cultivators.

The *Goands* are to be found wherever there are hills and fastnesses, but they abound most in the north and east of the Khumnum and Ramghur Circars ; although a wild uncultivated race that have scarcely advanced a step towards civilization, as is shewn by their non-association in villages. The Telinga *Goands* are not, like the wild tribes towards the north, addicted to cannibalism ; good faith and treatment render them tractable and submissive, and would doubtless turn their labour to profit, did circumstances demand it. *Dhurs*, the Telinga *Dhur*, is a despised impure creature. Foreign war and domestic dissension, which, by conferring intelligence, have given some importance to this class in other parts of India, having been wanting in Telingana for centuries, the race has remained in its present state of degradation and moral slavery.

Dwellings.—A Telingana village presents a striking contrast to a Mahratta one ; instead of the close flat-roofed habitations of the latter, huddled together, so as to take up the smallest possible space, the greater number of the houses of the former are separate, or, what is called, self-contained. The Gurrie in the Mahratta country which includes, generally speaking, all the houses of the village, is in Telingana a detached fortification of some fifty yards square, composed of masonry and mud, seldom having within its enceinte any houses save that of the zemindar or village chief. In the granitic country, the houses are usually of adhesive earth, of a square or rectangular form, smeared often with red earth, and tricked out with bands of chunam, (the sign of comparative comfort and cleanliness within,) with pyramidal roofs of palmyra leaves or grass. On some occasions the houses are more substantially built, and are tiled ; on others, they are mere sheds of palmyra leaves, marking the richer and poorer classes as occupants. The Dherwarra, always detached, and always filthy, is composed of habitations of the latter class.

In the sandstone country, the construction of the houses is different. From the inferior tenacity of the soil it is mostly rejected in building, or, when employed, is mined from the localities where it is ferruginous, and more adhesive. Bamboo and wattle are there the principal substitute for clay in the houses, and the strong-holds are con-

structed of hewn stone ; the labour required in rendering the last tenable, diminishes in no ordinary degree their number, although it may render the few that are constructed more formidable as places of defence.

Food.—The Brahmins of Telingana affect to eat nothing that ever was possessed of life, but report attributes to them any thing but a strict fulfilment of their profession. Their usual diet consists of rice highly seasoned, vegetable curries, cakes flavoured with garlic and asafoetida fried in ghee, wheaten bread, &c. ; with the assistance of the ghee, flour, and condiments, they take good care to avoid the evil consequences said to arise from an unazotized diet. The food of the Zemindars of the *Coombee* caste, resembles that of the Brahmins, with the addition of mutton, fowl, game, &c. The poverty of the cultivators restricts their diet to dry grains ; leguminosæ being within the reach of few, and that only in particular districts. This arises not from the higher price of equal quantities of rice and dry grains, but from the little nourishment yielded by the latter, rendering it a more expensive article of diet. It is only on occasions of festivals or merry-makings that they eat flesh, and (duhee, curdled milk) is also a very common article of diet among the poorer classes. The *Goands* and outcastes, as elsewhere, are wholly without scruples as to their diet, rejecting nothing, whether animal or vegetable, that can be digested by the stomach, and which is not actually poisonous.

Drinking the fermented sap of the palmyra tree, often to intoxication, is the invariable daily custom of the Telingana peasants. Towards Chinnore and Mahdapore, the palmyra tree is not so common, but is then much more detrimental. Matwa spirit, distilled from the flowers of the *Bassia Latifolia*, a common jungle tree, is had very cheap, and in consequence is much used. Brahmins are charged with partaking of both these forbidden beverages in secret, and perhaps with truth, for it would require a more heroic virtue than they are supposed to be possessed of, to keep them from an indulgence so readily procured, and the effects of which, a very ordinary degree of caution can conceal. Tobacco is used by all classes, being smoked and snuffed. Little *bhang*, or any of its preparations, and less opium, are consumed by the Telingas ; but the Goands indulge, as far as their means will permit, in the latter, to which they are much addicted.

DISEASES.

Fever.—Fever, of the intermittent and remittent types, are met with throughout the whole country, particularly at the close of the monsoons, and for six weeks afterwards; they are not very formidable diseases in the open granitic country, but in the neighbourhood of thick jungles, their severity is much augmented; in the sandstone district there is a good deal of fever in the course of the monsoon, from the great facility with which the soil parts with moisture by evaporation, thereby generating malaria; and here it may be remarked, that the superior drying quality of the sandstone soil over the granitic, is by no means a circumstance favourable to the salubrity of the former. A few days of an October's sun effects its desiccation, and sends up an evaporation loaded with impurity, at a time when the malarian influence is at its height, and when the human frame, weakened by the return of heat, is little adapted to resist its action. The fevers are then of a severe, and often a fatal character, to which the spirit-drinking of the mass of the inhabitants contributes in no small degree.

Spleen.—This disease exists on the banks of the Godavery, after its union with the Purneetah river, and all along the banks of the latter. At Sevoncha it is particularly severe; being attributed by the natives to drinking the impure water of the rivers, for the great depth before water is reached in digging, almost amounts to a preventive to their employing any other.

Cholera.—Compared with other parts of India, cholera cannot be said to be a very prevalent disease in Telingana. For the last eight years it has not appeared epidemically, and, on that occasion, it followed as a consequence of a severe dearth. It is held in great dread by the inhabitants. Leprosy and Elephantiasis, in all their horrid and disgusting shapes, are frequently met with.

Eye complaints.—Diseases affecting the globe of the eye, particularly ulcers of the cornea, albugo, and other consequences of ophthalmia and cataract, are common, especially in the sandstone districts. From what came under my observation, I should say, that affections of the eye appendages are rare.

Dracunculus.—This singular and troublesome disease is met with, in a greater or less degree, all over the country. At Chinnore it is less prevalent than at Worungul, and at Worungul less than at Khummum, which

would appear to be its head-quarters. The natives universally ascribe it to the use of well-water, whether in drinking or bathing; although their explanation of how this happens is not probably correct, from many observations I have made, both here and in the Bombay presidency, I think their opinion is so far well-founded, that when the supply of water is dependent on wells sunk in a decaying rock, whether of granitic or trap, in other words in *Mohrum*, *Dracunculus* is almost certain to exist. There is seldom a body of men who are so similarly situated with respect to diet, exercise, clothing, &c. as European soldiers, yet I have known one-third of a European Regiment, which was indebted solely to wells for its drinking water, laid up with Guinea worm, at the same station with another which used aqueduct water, in which there was not above six or eight cases. The situation, too, of the Telinga cultivators, in the Circars of Khummum and Worungul, is remarkably alike; yet for one case of *Dracunculus* at Worungul, there are four at Khummum, the former deriving their chief supply of water from tanks, while the latter depend solely on their wells, which are sunk in a loose rock. The natives allege, that this disease is acquired by the germ entering the body while bathing at the wells, and that the greater latitude afforded by tanks for washing, diminishes the chances of the worm getting access to the body; but the rare ablution of the European soldiery, who are fully as liable as the natives to this disease, disproves their manner of accounting for the complaint.

The native *hakeems* are, for the most part, Brahmins; their great standby in fever is starvation, and were this means of cure used with moderation, it might be productive of good; but it is pushed sometimes to such an extremity as to cause death from sheer inanition. Opium is given in Cholera, but from the great nicety required in administering the drug in this disease, I should fancy they did as much harm as good with it. They have a proverb for the treatment of Guinea worm, "*Ek naroo huzar dawas*," for one worm there are a hundred remedies; which pretty clearly shews that the much-vaunted native practice in this disease is not so successful as some have represented.

The Surgery is in the hands of the *hujjams*, whose universal cure would seem to be the actual cautery. I have heard of the operation of cataract being performed, but have not had an opportunity of seeing either the operator or his tools. The *hakeems* have their books

of medicine, with the characters written, or rather scratched, on palmyra leaves.

With regard to the most eligible spot for cantoning troops, there are several in the granitic country that would answer the purpose, being salubrious and well situated for supplies, &c. The following circumstances, when grouped together, point out a locality well adapted for this purpose. A red, gritty soil; the neighbourhood of a clear tank; and the country around open and unbroken. The vicinity of a black granitic hill, adding as it does much to the heat of a station, should be avoided: above all, let the troops be independent of wells for a supply of water, for besides its almost constant bitterness, it will bring on Guinea worm, than which no disease can more effectually cripple or render them inefficient. More difficulty would be experienced in fixing a locality for this purpose in the sandstone country. There is no point, after the junction of the Godavery and Purneetah, that can be regarded as salubrious during the latter part of the monsoon, and for weeks after. Madhapore, a village ten miles below the Sungum, where a detachment of the Nizam's troops was at one period cantoned, was found to be very unhealthy at certain times; nor can this excite our surprize, situated as it is between a dense jungle, and the slough and ooze of a muddy river. Chinnore, ten miles above the Sungum, would seem to promise better, the jungle there not being so dense, the river clearer, of much smaller compass, and at a greater distance; while the ground also rises somewhat towards the town.

The Brahmin village of Muntini, still higher up the Godavery, would seem preferable to Chinnore in point of salubrity; but other considerations would, in all probability, fix on the latter as the more eligible position of the two, for troops to be stationed.

Communications.—The road from Masulipatam to Hyderabad skirts the Circar of Khummum to the south. It is a good road, although liable, as every other in the Peninsula is, to be cut up by flood during the monsoon. The red soil is well fitted for road-making, becoming bound and hard when stamped or trod upon. The black soil is, as elsewhere, less so, but its extent in many parts of Telingana is such, that it might in a great measure, be avoided, in the construction of roads. With the exception of the one above-mentioned, there is no other communication of the kind in Telingana, for it would be a misnomer to apply the term to the rude, unmade paths of the

country. In the Chinnore Circar, carts are a very ordinary mode of conveyance, and, as timber is abundant, and iron procured at comparatively a small cost, they are more substantial and better built than in many other parts of India. In the other two Circars, carriage bullocks are almost wholly employed, to the exclusion of carts.

With the exceptions of the Godavery, and the stream sent from the Pakhall Lake to the Kistna, there is no permanent running water in those parts. The latter, although deep, has scarcely width enough to be turned to account as an avenue of commerce; but the Godavery is, with some impediments which would seem removable by art, a navigable river from June till February. I have conversed with more than one individual, who has sailed down the river from Chinnore to Bhudrachellum in three days, from which to the sea, at Coringa, no great obstacle offers itself. Captain Fenwick, late of the Nizam's service, from whom I have derived the greater part of the information respecting the Godavery that I have now the honour of communicating, and who had ample opportunities of making correct and extensive observations, having frequently sailed down the stream, says, "From Coringa to Bhudrachellum the navigation is perfectly free, except that there is a whirlpool, or *papee condul*, not far above Palaverum, at the opening of the narrow and tortuous straits of the same name, which wind through a range of high hills for more than twelve or fifteen miles, commencing from the Nizam's boundary. The river here is generally not more than 300 yards wide. In some places, I think even less. The mountains rise almost perpendicularly from the water's edge, and the depth is many fathoms."

From Bhudrachellum to Ellapoka, the river is impeded by rocks when it is low; but when half full or more, there is difficulty in the navigation. The same description applies to the rocks marked at Chentral, Doonurgoovum, and Albaka; from the last point the river, although quite free, is somewhat shallow, early after the rains. The next obstacle is the two whirlpools at Mooknoor, which, when the river is full, present a considerable obstacle, but not so when it is moderately full, at which time the boatmen, who are very expert, manage to steer between them without danger. The passage between Nulumpully and Mooknoor is only tedious after the rains, as during the freshes the rocks may be sailed over. The last obstacle in the Godavery is just at the

junction of the Indaroottee. The channel through the rocks, which are there high, is very narrow, and pointed ones in it render the passage somewhat dangerous. "Some of these," adds Captain Fenwick, "I had removed; the nature of the rock being soft slate."

From the junction of the Indarooke to the Purneetah, not a pebble is met with, and the Purneetah itself, which contains at least double the water of the Godavery at Chinnore, is without impediment of any kind up to Coorta. The rocks there and at Dharoor are only formidable when the river is low; above these, there is no obstacle as far as Chunchmundel above Woone, where the rocks are formidable, if not insurmountable obstructions.

The map of the Godavery and Purneetah accompanying this letter, is copied partly from maps procured from the Residency, and partly from plans sent by Captain Fenwick, drawn up from his own experience.

The boats of the Godavery are miserable canoes, hollowed out of the trunk of a single teak-tree. Two are often joined together by means of a raft of bamboos, particularly for the purpose of ferrying; they are without sails or fixed rudders.

I cannot conclude these letters without bearing testimony to the comfort and happiness which the natives of these districts appear to enjoy. The short period I spent in the country could not afford me many opportunities of inquiring minutely into the circumstances, or of making very extensive observations; but there are signs of general prosperity, particularly in the Circars of Worungul and Khummm, that he who runs may read; of these I may mention the frequent occurrence of silver ornaments among the wives and children of the *Coombees*, and the rare circumstance of a ruined tank; nor can I omit to mention the kindness of Mr. Wighton, who afforded me every facility and assistance in his power, in fulfilling the purpose for which I had been sent to the districts.

A general Review of the Species of true Stag, or Elaphoid form of Cervus, comprising those more immediately related to the Red Deer of Europe. By EDWARD BLYTH, Curator of the Museum of the Bengal Asiatic Society.

Of the various minor groups distinguishable in the great genus of the Deer (*Cervus*, Lin.), a very obvious one is exemplified by the European Stag (*C. Elaphus*, Lin.), or Red Deer of Britain, to which the Greek word *Ελαφο* has hitherto been specifically attached; and it is accordingly known as the *Elaphine* group of Colonel Hamilton Smith, or that of the Stags, properly so called. It consists of several large, powerful, and comparatively long-bodied species, with cylindrical antlers,* bearing many tines or branches, and a short tail surrounded by a pale disk. The males of them, and occasionally, I believe, the females also, are furnished with upper canine teeth. Their coat is more or less harsh, tubular, and spongy, and conceals in winter much delicately fine wool; being in the young speckled, or *menilled*, with white, as in most, but not all, other *Cervi*; which spotting disappears with the first shedding of the hair, except, in some, a row along each side of the spine, which however are considerably obscured, though there is again a tendency in some species to resume the spots in summer livery, which is always more or less rufous (as in most other Deer), that of winter being generally darker, especially on the neck, limbs, and under-parts, and the female being mostly paler than the male. The most peculiar character, however, of this group, though it nevertheless does not occur in all the species which strictly pertain to it, consists in the normal presence of a second basal tine to the antlers (*vide* plate,—fig. 3, *b*,) which occurs normally in no other species of the family: these two basal tines are denominated, in books on “venerie,” the “brow antler” (*a*), and the “bez-antler” (*b*); for the word “antler” referred to the principal tines, or branches, and not to the entire

* In conformity with the practice of some recent naturalists, I apply this term to the *deciduous* horns of the Deer family, as distinguished from those of other horned ruminants, which are borne permanently, and have their bony core invested by a cuticular or corneous sheath, likewise persistent, after having been (at least the softer external layer) once shed in the young animal, and which partly corresponds to the *velvet*, or hairy skin, of a growing Stag's antler, that withers and shreds off when the vessels it encloses are obstructed by the final deposition of bone, forming the *burr*, or basal ring.

production, which may be more conveniently distinguished by that appellation. A third tine (*c*) is given off midway up the beam, which was termed the "royal" antler; and the ramifying summit of the beam (*d*), was styled the "crown," or "surroyal." I shall simply designate them as the *first and second basal tines* (*a, b*), the *medial* (*c*), and the *crown*; and may remark, that in the European and some other species, the last assumes a more characteristic form than in the generality of Wapiti Stag's antlers, (the species represented,) being generally trifid (as in fig. 3, *d*), with a disposition to subdivide further, more particularly shewn by the innermost and hindward of the three coronal prongs that issue from a common centre, and which is always longest, imparting a lyrate curvature to the entire pair of antlers when viewed in front.

These noble and picturesque animals are gregarious, and frequent extensive moorlands, interspersed with bog and forest, more particularly on the lower ranges of mountains, where indeed such tracts usually occur. In general, or with some modifications, the habits of the British Red Deer may be presumed to illustrate those of all the other species; the gigantic Wapiti, perhaps, differing most in its monogamous inclination, which, it may be, the nearly allied Jerrael Stag (*C. Wallichii*), of middle Asia, likewise evinces. The geographical range of the group extends to both continents, but is confined to the northern hemisphere; and, with the sole reported exception of the Jerrael, upon the mountainous interior of the Burmese territory, to the northern temperate zone; with one established exception, however, they belong to the eastern continent.

The American species, denominated the Wapiti (*C. Canadensis*, Gmelin, *C. Strongyloceros*, Schreber), or "Elk" of the Anglo-Americans, by whom the true Elk (or *Alces* of Cæsar) is termed *Moose*,* is

* The frequent mal-appropriation of vernacular names, such as is here noticed, and which is a great deal too much encouraged by writers on Zoology, leads to continual misunderstanding and mistakes, of which an instance is now before me, in the description of the true Elk, published in the Naturalist's Library, where an anecdote related by Major Long and Mr. Say, referring to the Wapiti under its false name of Elk, is assigned to the species properly so called. In South America, the same appellation, Elk, is bestowed on the *Cervus Paludosus*; in India, on the Sambur, *C. Hippelaphus*; in the Malayan territories, on the *C. Equinus*; and finally, in South Africa, the Caffrarian Impoof (a sheath-horned ruminant) is designated *Elk*, *Eland*, or *Eland-bok*. "*Eland*" is the Swedish term for the true Elk, and signifies *miserable*; in allusion, no doubt, to the extremely plaintive and dolorous cry emitted by this animal, rather than to its being subject, as alleged, to frequent fits of epilepsy, which has been suggested to have induced the application of such a name.

a great imposing animal, the largest (so far as known) of the whole group; and it would appear to exemplify a subordinate section of the Stags, characterized generally by large stature, a heavier and less compact build, shorter tail, and enlarged white disk surrounding it; the head borne low and horizontally, with the neck much bowed, as in a Camel; and the crown of the antlers assuming generally a different form from that of the others, very seldom trifurcating (so far at least as my experience has gone), but the continuation of the beam usually turning abruptly backward and downward, and throwing up a series of successively diminishing tines, all nearly in a line with each other (vide Plate, fig. 4). Of a very considerable number of full grown Wapiti antlers, I have seen but one pair whereof the crown decidedly trifurcated (as in fig. 3); and have remarked that many had the second basal tine longer than the first, which however is abnormal, and also that the greater number had a snag (fig. 3, *e*,) near the origin of the two basal tines, which is of rare occurrence in the European and what other species I have had opportunities of examining.

The Wapiti stands four feet and three quarters to five feet and upwards high at the shoulders, with towering antlers, sometimes above five feet in length, though they rarely much exceed four feet; they are often a foot round at base above the burr, and eight inches in the beam; the pair diverging more or less, but sweeping round till they converge towards the extremities, as in the genus generally. An unusually large male, killed by the hunters attached to the expedition of Messrs. Lewis and Clark, was found "on placing it in its natural erect position, to measure five feet and a quarter from point of hoof to shoulder;" but the curve of the body is probably here included, which would add some inches to the alleged height of so large a creature. It is certain that they do not generally attain to so much as five feet high, and the female to more than four feet and a half. The head of the male measures fifteen inches from muzzle to base of antler; the ears nine inches; tail four inches, or, with hair, five; and from nose to base of tail, in a specimen four feet and three quarters high, eight feet ten inches. This large species (of which magnificent specimens are now living in England, in the Zoological Gardens and elsewhere,) has an aspect of much grandeur and stateliness, but is deficient in the grace of its European relative; being considerably more massive and

ponderous, with stouter limbs, shorter in proportion, and terminated by broader and more ox-like hoofs; at least the inner hoof of their cleft fore-feet (more especially) is much widened. The full grown male, in winter more particularly, has a peculiar character in a sort of beard pendent from the throat, in aspect not unlike a dewlap; besides which, as in the European species, the hair is in winter lengthened around the neck, only not so coarse as in that animal. The summer hue of both sexes is very bright rufous, darker on the head and neck; and the male is seldom without some appearance of the throat beard, though his neck becomes quite smooth; in the course of a few weeks only, the tips of the hairs begin to fall off, and the colouring is thus rendered nearly similar to that of winter, save that the hues are much less finely brought out; at which latter season the Wapiti is clad with longer hair, of a pale lilac-chocolate colour, approaching to whitish in fine males, with the limbs, lower part of the neck, and under-parts, dark and deep russet brown; colours which are not so intensely contrasted in the females and younger males. The fawn is but slightly menilled on the sides, and it is remarkable that there is no trace of the usual row of large spots on each side of the dorsal-line, which alone are permanent in the European Stag. Whether the same is observable in the young of other species of this group, I have not now the means of ascertaining. The general colour of the Wapiti fawn is deep rufous brown, fainter on the sides, and still more so on the under-parts, (whereas the adults are there darker); the face, the neck partly, and immediately above the hoofs, being much darker; a black line passes along the back, and there is a streak of the same, as usual, over each eye. The characteristic expression of its species is strongly marked from the first. They do not acquire their full growth under four or five years at least, (like the European Stag); but, as in the rest of the genus, can propagate at eighteen months old. Mr. Bullock states, that one five years of age stood four feet and a half high, and was nine feet in total length. These younger Wapiti have more the aspect of the European species, and, like the female, shew little trace of the throat-beard, nor have they much lengthened hair round the neck. The fully adult female more resembles the European hind, than is the case with the mature males of these species, with all their distinctive characters fully developed. At the same time, I have observed that some European Stags have

decidedly more the contour of the Wapiti than others, being lower upon, and not so fine in the limbs; as is well exemplified by two Common Stags that were living in the Zoological Gardens, Regent's Park, at the time I left London, near the end of April, 1841.

The full grown Wapiti, like other true Stags, sheds its antlers either late in February, or (the majority) during March: in less than a month, the new have attained a foot in length, and continue to grow with surprising rapidity, at one time, above an inch and a half per day; but the growth slackens as they advance towards completion and solidify, being not finished before August; the velvet shreds off in September, when the rutting epoch commences, and lasts through the following month; the period of gestation is rather more than eight months, (as I was informed at the Zoological Society's Garden, and not so much as nine months, as has been asserted); being about the same, accordingly, as that of the European hind; and the young, either one or (in the wild state) commonly two in number, and in case of twins (which would appear to happen much oftener than in the British Red Deer) generally male and female, being accordingly dropped—a few at the end of May, but the majority in June. Colonel Smith noticed, that the medial and basal tines of the antlers of this species “seem to be instruments of use; for, with them, when a small dead pine, or a bar of a split fence, sixteen or eighteen feet long, lies in their way, they will lift and toss it clear over their heads.” Possessing these appendages, they make such incidental use of them; but we are not to suppose that their antlers were designed for purposes of this kind.

The wild Wapiti, notwithstanding its great size, is as timorous as any other Deer; except, as usual, during the rutting excitement, when it is dangerous to approach the males. It inhabits the greater part of North America, but “does not extend its range,” according to Dr. Richardson, “further to the north than the 56th or 57th degree of latitude, nor (in the fur countries) is it found to the eastward of a line drawn from the south end of Lake Winnipeg to the Saskatchewan, in the 103d degree of longitude, and from thence till it reaches the Elk River, in the 111th degree. To the south of Lake Winnipeg, it may perhaps extend further to the eastward.” Messrs. Lewis and Clark, in their arduous expedition to the source of the Missouri, and thence to the shore, of the Pacific, encountered the Wapiti in considerable

abundance nearly throughout their route, and pretty high up the mountains; and they state it to be “common in every part of the country, as well in the timbered lands as in the plains, though much more numerous in the former.” Hunter, in the interesting “Memoirs” of his youth, passed among different (so called) Indian tribes, asserts that “they are small, far south, but increase in size in the neighbourhood of the mountains.” He also mentions, that they are very large about the Columbia. In the States, the distribution eastward of this species is limited by the settlements, in the vicinity of which it fast disappears as they become populous; having been extirpated more than a dozen years in Illinois,* while Dr. Godman (in 1826) writes, that “it is still occasionally found in the remote and thinly settled parts of Pennsylvania, but the number is small; and it is only in the western wilds that they occur in considerable herds.”†

Dr. Richardson describes this species to be “pretty numerous amongst the clumps of wood that skirt the plains of the Saskatchewan, where they live in small families of six or seven individuals:” the males, according to Dr. Harlan, attaching themselves to the females, and the members of each troop being strongly united. Colonel Smith also mentions, that “they are said to live in small families of six or seven individuals, headed by an old male, who is reported to be monogamous; the rest, besides the hind, being calves or semi-adults.” I have met with no account of the sexes ever herding separately: but Hearne asserts, that “they generally keep in large herds, and, when they find plenty of pasture, remain a long time in one place;” so, also, Umfreville relates, of his “Red Deer,” which is clearly this species, though *C. Virginianus* is often so termed in the States, “They are very common in all parts of the country, and they assemble in herds; it is not unusual to find 500 or 600 of them in a place; but they are not to be met with on the open plains, where the Buffaloes [American Bisons‡] resort.” The same is noticed in Keating’s “Narrative of an

* Featherstonehough’s Journal.

† American Natural History.

‡ The term *Buffalo* is often vaguely applied by persons not naturalists, to any animal bearing a general resemblance to an Ox, but which is obviously distinct from an Ox. Thus, when English graziers talk of having seen a Buffalo, it will generally be found that the large or Brahminee breed of Zebus, or Indian humped cattle, is intended; and in North America the Bison of that continent is thus termed (as above

Expedition to the source of St. Peter's River;" but Lewis and Clark occasionally observed them upon the same plains with the Bisons, as in page 82 of their work, where it is stated, that "fifty-two herds of Buffalo, and three of Elk [Wapiti] were counted at a single view!" I have been informed, however, by a gentleman who has travelled much in the western regions of North America, that they never associate with the Bisons, and it is very rarely that both species may be seen at one view: though Catesby asserts, that "they usually accompany Buffaloes, with which they [did, in his time,] range in the upper and remote parts of Carolina, where," he remarks, "as well as in the other colonies, they are improperly called Elk." Keating mentions "a herd of fifty or sixty Elk," which some of his people "approached on horse-back, as near as they could, without alarming them, when the party dismounted, and crept for about a quarter of a mile on their hands and knees, leading their horses until they came within eighty yards, when they all fired, and one of the herd fell. A member of the party then mounted his horse, and pursued the herd for more than a mile, but his horse was too much alarmed by their appearance to be urged on near enough to allow pistol-shot to take effect. While in pursuit of them, he observed the Elk in the rear would frequently stop to look at him [standing at gaze, as it is termed, like all other ruminants]. When in herds they are easily overtaken, but when they are alone it is much more difficult. This animal is represented, however, as short-winded."* It is probable

noticed), which, inhabiting the same region with the so-called Indians, is sometimes even worse styled—the Indian Buffalo. In India, the word *Bison* is, in like manner, attached to a species which is not a Bison, namely, the Gaour, (*Bos Gaurus*); and Capt. Lyon mentions three distinct species of animals inhabiting the mountains to the south of Fezzan, all of which he erroneously calls Buffaloes, though two at least of them are not even Bovine. Those who write on subjects of Natural History should be more definite in their choice of vernacular appellations than has hitherto been customary, at least in the English language, and in time such errors may be eradicated; though not before the city of *Buffalo*, in North America, and the *Elk River* (so named from the number of Wapiti Stags, not Elks, that are found on its banks), have perpetuated the memory of them in these established denominations. The name Buffalo derives from the term *Bubalus* of the ancients, which was applied to the true Indian species; otherwise, it has been remarked, on the subject of purely fortuitous coincidences of the kind, a legitimate derivation would have seemed to occur in *Bœuf à l'eau*!

* Keating's "Narrative" vol. ii. p. 1. "A large herd of Elk" is also mentioned in vol. i., p. 303; and I could cite other instances of Horses being much frightened at the sight of these creatures.

that the herds of Wapiti are made up by the aggregation of a number of distinct families, such as have been already noticed, the individuals of which know each other, and keep together; for this is the case in many gregarious animals, and I have observed that, in the common Fallow Deer of English Parks, the sexes of which herd separately during the summer, particular individuals of the same age occasionally evince a friendship for each other, and always feed together, which partiality is resumed, by the same individuals, season after season. In like manner, herds of domestic Oxen commonly separate, or rather resolve into pairs; and the advantage of always stalling such pairs together is duly appreciated by English graziers, who find that their cattle are apt to pine, and not to fatten well when separated from the companion of their choice, in whose presence they appear to derive some consolation for the irksomeness of imprisonment.

The Wapiti Stag feeds much, like the European species, upon grass, and in like manner eats the young shoots of willow and poplar, as also "some buds of coniferous trees," according to Colonel Smith, who, from personal observation, adds that "in summer they feed on aquatic plants, which they seek under water, while sheltering themselves in that element from the bites of flies." It is worthy of notice, that the Rein Deer Gadfly, according to Captain Franklin, "infests the Wapiti, but not the Moose or Bison; nor have its larvæ ever been found upon the Wild Sheep or Goat of the Rocky Mountains, although the Rein Deer of those parts are as much tormented by them as those of the coast."* Kalm states, that this species feeds eagerly on the broad-leaved kalmia, "which is poisonous to other horned animals;" and Dr. Richardson describes them to be "very fond of the hips of the *Rosa blanda*, which forms much of the underwood in the districts which they frequent. Hearne," he continues, "remarks that they are the most stupid of the Deer kind, and frequently make a shrill whistling and quivering noise, not very unlike the braying of an Ass. Mr. Drummond, who saw many of these Deer in his journeys through the plains of the Saskatchewan, informs me, that it does not *bell*, like the Stag of Europe; and Mons. F. Cuvier describes the cry of the male as being prolonged and acute, and consisting of the successive sounds of *a*, *o*, *u*, (French,) uttered

* "Narrative of Second Expedition," p. 189.

with so much strength as to offend the ear. The cry of the European Stag, when compared to it, is dull and tame, though not deficient in strength." On one occasion I have remarked a cry, which, though not loud, corresponded otherwise with F. Cuvier's description, from an isolated female, which seemed to express *ennui*, or impatience of solitude: the only sound I have ever heard the male emit, is a disagreeable snuffling noise, expressive of menace, which it often makes during the rutting season. Dr. Richardson further adds, after Hearne, that "the flesh of the Wapiti is coarse, and but little prized by the natives, principally on account of its fat being hard like suet, [as, indeed, in all other *Cervidæ*, except the Elk.] It seemed to me to want the juiciness of venison, and to resemble dry, but small-grained beef. The hide, when made into leather, is said not to turn hard after being wet, and, in this respect, to excel Moose or Rein Deer leather."*

Dr. Godman remarks, that "the Wapiti is shy and retiring. The moment the air is tainted with the odour of his enemy, his head is raised with energy, his ears rapidly turn in every direction to catch the sound, and his large glistening eye expresses the most eager attention. Soon as the approaching hunter is fairly descried, the Elk bounds along for a few paces, as if trying his strength for flight, stops, turns half round, and scans his pursuer with a steady gaze; then, throwing back his lofty antlers, he springs from the ground and advances with a velocity that soon leaves the object of his dread far out of sight. In the rutting season, however, this animal assumes a more warlike and threatening aspect. He is neither so easily put to flight, nor can he be approached with impunity, although he may have been wounded. His hoofs and horns are then employed with full effect, and the lives of men and dogs are endangered by coming within his reach." An instance of this is recorded by Major Long and Mr. Say, wherein a wounded animal "turned furiously upon the foremost of his pursuers, who only saved himself by springing into a thicket, which was impassable to the Elk, whose enormous antlers becoming so entangled in the vines as to be covered to the tips, he was thus held fast and blindfolded, and was despatched without difficulty." It can only be wondered that such cases are not of much more frequent occurrence.

* *Fauna Americana-borealis*, and Hearne's Narrative.

The most nearly allied species to the Wapiti, I conceive to be the Jerräel Stag, (*C. Wallichii*, Duvaucel), a splendid Asiatic animal, hitherto only known in Europe from the coloured drawing transmitted by M. Duvaucel, and published by Mons. F. Cuvier. The following particulars are principally taken from a MS. description by the late Major-General Hardwicke, which, together with a bad coloured figure of the individual, I found among his papers deposited in the library of the British Museum. It doubtless refers to the identical specimen which was seen by Mr. Hodgson, and figured by M. Duvaucel, and the antlers of which are now before me in the Museum of the Asiatic Society: these, which are evidently the same as are figured in both drawings, I am enabled to state positively belonged to an animal in its third year, at which age it would by no means have attained its full growth; and the suggestion of my esteemed friend, Colonel Hamilton Smith, therefore, that it is doubtful whether the specimen was not aged, with declining antlers, I venture to negative without any hesitation.

This animal, according to General Hardwicke, stood four feet and a quarter high at the shoulder, and from muzzle to base of tail measured seven feet and a quarter; the tail five inches, surrounded by a disk nine inches square; head to vertex one foot five inches, and thence to shoulder two feet five inches; the ear, including its base, eleven inches. Hair on the ridge of the neck long, thick, and bushy, standing like a mane, and browner than the rest.* The prevalent colour a brownish ash, darkest along the dorsal line to the rump-patch, which is pure white, contrasting strongly with a blackish border, that merges without into the hue of the rest of the body. The limbs and under-parts are remarkable (more particularly as shewn by M. Duvaucel's figure) for being pale, whereas in other Stags these are darker than the body. Lips and chin white; the ears large and ovate, with a deep-sheathed base, and covered with whitish hairs; and the eyes large and surrounded by a whitish circle. The texture of the coat appears, from description, to resemble that of the Wapiti; and General Hardwicke states, that the animal "bowed down its neck in the manner of a Camel," *i. e.* the Wapiti, "and, when moving, carried its head very high, bringing the

* The whiteness of the antlers, as represented by M. Duvaucel, intimates that they were then about to be shed, and consequently the season at which the animal was figured, which was probably in the month of February or March.

front almost to a horizontal position. It was brought from Muktenauth, about five weeks journey from the valley of Nepâl, in a north-westerly direction;" and the name *Cervus Wallichii*, I may remark, occurs in the interesting list of Mammalia inhabiting the Tenasserim provinces, prepared by the late unfortunate Dr. Helfer;* though this alleged identification of the species much requires to be confirmed.

The pair of antlers in the Society's collection are rather more than two feet long, following the curvature of the beam, five inches and a half round above the burr, and five inches immediately above the two basal tines; each possesses these, and one of them has no further subdivision, while the other throws off what I cannot hesitate in considering to be a median tine, or "royal," the bifurcation being 11 inches above the second basal tine, or "bez." Mr. Hodgson, therefore, I feel satisfied, is incorrect in supposing that the Jerrâel has no median tine.† In the Gardens of the Zoological Society, there now exist (or did so, when I left England,) a fine pair, male and female, of the noble Persian Stag, or *Maral*, brought from that country, and presented to the Society, by Sir John McNeill. At the time of their arrival, the male bore his second pair of antlers, (what, however, are usually regarded as the first, though the true Stags, unlike the Fallow Deer, Axis, &c., develop a small knob, or "button," as technically styled, the first year); this second pair consisted, as usual, of slender branchless beams, termed "brockets," but the following year (1840) were replaced by a pair corresponding to those of the Jerrâel now before me, except that the median tine existed in both antlers. In the common European Stag, the second basal tine is ordinarily wanting at this age, but irregularities of the kind occur in every species: it is remarkable that the two basal tines of the young *Maral*, or Persian Stag, in the Zoological Gardens, were conjoined for a short space at base, but it remains to be ascertained whether this be a permanent character. In the Jerrâel's antlers before me, there is an interval of an inch and a half in one of them, separating the two basal tines, the same as is generally noticeable in the European Stag; while, in the Wapiti, this scarcely ever exists. For a figure of the pair, *vide* Plate, fig 7; and of those of the Persian species, sketched from

* *Vide Journal of the Asiatic Society of Bengal*, for 1838, p. 897, et seq.

† *Vide* Note to p. 721, *ante*.

memory only, though I venture to affirm not very inaccurately, vide fig. 10.

I now pass to a consideration of Mr. Hodgson's *C. Affinis*, represented in pl. — ; and with all deference to that gentleman, I feel constrained to observe, that I can perceive no reason whatever why his animal should not be identified with *C. Wallichii*, as originally suggested by Mr. Ogilby, and accepted by myself on a former occasion. It appears to me, that Mr. Hodgson's specimen represents the animal in its fourth, or probably fifth, year ; at apparently the former of which ages, there is a stuffed specimen of *C. Elaphus* in the Museum of the Zoological Society, with absolutely (so far as I can remember) the same flexure, or somewhat abrupt bend upwards about the middle of the beam, represented in Mr. Hodgson's sketch: the youth, or "moderate age," of this naturalist's specimen is attested, as he justly observes, by the condition of the teeth and cranial sutures ; and I cannot doubt that, with full maturity, this noble species possesses a terminal crown to its antlers, assuming, thus, every feature of a typical member of the Elaphine group.

The Jerräel, probably, extends its range widely over the Chinese empire ; and it may be presumed to be the "great Stag" mentioned by geographers upon the ranges of the Altai. Such is indicated in Strahlenberg's work on the northern and eastern parts of Europe and Asia, (p. 371, English translation,) as the *Irbisch*, or great Stag of Siberia, which inhabits that vast region, in addition to the *Isubrissen*, or common Stag ; the *Suchata*, or Elk ; *Olen*, or Rein Deer ; *Cosa*, or Roe, &c. Whether it be identical with the Kashmir Stag of my friend Mr. Vigne, which I think is very likely, that gentleman having observed it in summer garb, remains to be determined. I understand that Dr. Falconer considers them distinct ; and, at the request of Mr. Vigne, who furnished Dr. Falconer with some particulars with which he has likewise favored me, I leave this Kashmir species to be described by the latter eminent naturalist. I may, however, venture to publish two drawings of an antler of the Kashmir Stag (Plate, — figs. 8, 9,) in the collection of Mr. Vigne, the dimensions of which are already published in the Proceedings of the Zoological Society for 1840, p. 72, on the occasion of my exhibiting the specimen. This antler measured forty-four inches in length, and was eight inches round above the burr ; the

general character being intermediate to that of the Wapiti and of the European Stag, but agreeing more nearly with the latter in its kind of granulated surface. Respecting the great Siberian species, we are informed by Pennant, (in his Arctic Zoology, p. 31,) probably on the authority of a private communication from his correspondent, Professor Pallas, that, "Stags are totally extirpated in Russia, but abound in the mountainous southern tract of Siberia, where they grow to a size far superior to what is known in Europe. The height of a grown hind is four feet nine inches and a half, its length eight feet, and that of its head one foot eight inches and a half," which is proportionate to Mr. Hodgson's admeasurements of the skull of the male,* and scarcely, if at all, inferior to the American Wapiti. I cannot bring myself to think that an Elk (*Alces Cæsaris*) is here alluded to; but may mention that a fully grown female Elk, which I measured alive in the Zoological Gardens, gave eight feet and a quarter from muzzle to base of tail, and stood five feet two inches high at the back; the apparent elevation of its withers consisting of hair only. Its head, measuring over the drooping upper lip to the rudimental naked muzzle, gave twenty-six inches and a half.

The ordinary fossil Stag of Europe, currently identified with *C. Elaphus*, is generally about one-fourth larger in all the dimensions of its antlers than the common existing species of the same region, as remarked to me, of the fossil specimens found in Switzerland, by my friend Professor Schinz, of Zurich; and this I have equally found to be the case in numerous examples obtained from the gravel and peat of various districts in the British Islands. It would even appear that a remnant of this larger race still survives in Hungary, or was in existence not many years ago. Of such an animal, it is stated, in a German sporting work, 'Wildungen's Wiedmann's Feierabende, (p. 91,) that the author "has to thank Count Erbach-Erbach for the antlers herewith carefully figured, (and one of which is copied in the Plate, fig. 11), which prove that the Giant Stag is not yet totally extirpated in Europe. The animal which bore them was shot by a Wallachian, in the year 1815, on the Imperial Lordship Rewantz, on the Buckowina, and the Count received the antlers from a friend who superintends the imperial

* Vide p. 722, ante.

studs in that province, and who assured him, that the specimen by no means represented one of the largest of the Stags still found in that country, and hoped that he would be able to send one still more considerable. The circumference of the burr was eleven inches and a quarter, (Rheinland measure,) and of the beam, above the basal tines, nine inches and a quarter. Extreme expanse, measured outside, five feet, and the innermost tips were three feet and half asunder. Length of the right horn, following the curvature, four feet from burr to summit.* The character of these antlers is absolutely that of the British Red Deer, but the size equals the Wapiti; and it is strange that so grand a species, for such it must be, should still remain to be investigated and described. I am inclined to suspect that to this "Giant Stag" must be referred an extraordinarily fine pair of "German Stag horns," that have been hung up, as I understand for more than thirty years, in front of a cutler's shop, in Great Turnstile, London. These measure forty-one inches over the curvature, and ten inches and a quarter round at base, above the burr; the crown of one, in particular, is very fine; and of numerous other Stag antlers, imported from Germany, to be manufactured into knife handles, &c., not any approached to these dimensions. The antlers of the common European Stag, or British Red Deer, seldom exceed three feet in length, and are generally under; and the animal scarcely stands above three feet and a half high at the back; but its general form is more elegant than that of any other species of the group with which I am acquainted.

(*To be continued.*)

Explanation of the Plate.

Figure 3 represents a Wapiti Stag's antler, *a* and *b* indicating the two basal tines or branches, or the "brow and bez antlers" of writers on *venerie*; *c*, the median tine, or "royal antler;" and the portion above *d, d*, the "crown, or sur-royal;" *e*, is a mere snag, of very common occurrence in this particular species, and not very unfrequently met with in the Axine group of Deer, where it is always thus directed

* For these particulars I am indebted to the kindness of Colonel Hamilton Smith, to whom a copy of the work was presented by the author, who was one of the chief observers of the game and forests of the Elector of Hesse.

upwards, and not outwards and forwards (like a veritable second basal tine, or "bez"). Neither the second basal nor the median tine ever occurs in the Axine or Rusa group, to which the *C. Elaphoides* may be referred, a species wherein (normally) each of the ordinary two coronal prongs of the Axine group merely *bifurcates*, with a tendency to subdivide further; the *C. Elaphoides* has, besides, the shorter and thicker body of the Axines, and no disk surrounding and ascending above the tail, as in the true or Elaphine Stags. Its naked muzzle, also (if I mistake not), is more expanded, as in other Axines.

Figures 1 to 6 represent some picked antlers of the Wapiti Stag (*Cervus Canadensis*); 7, of the young Jerräel Stag (*C. Wallichii*); 8, 9, of the Stag of Kashmir (*C. Wallichii*?); 10, of the young *Maral*, or Persian Stag; 11, of the great Hungarian Stag; 12, a singular and very abnormal variety of the European Stag.

Figure 2 represents a Wapiti antler, with the basal tines a little removed apart, which is very seldom the case in this species, though common in *C. Elaphus*; fig. 3, represents a trifurcating crown, which is also rarely seen in the Wapiti; fig. 4, either wants the median tine, or has it removed so high up the beam that it appears part of the crown; figs. 8, 9, representing an antler of the Kashmir Stag, scarcely differ from fig. 2; fig. 10, representing an antler of the young Persian species (drawn from memory only, though I pledge its essential correctness), is remarkable for having its basal tines united for a short space where they issue forth, and may be compared with fig. 7, illustrating what I consider to be the corresponding age of *C. Wallichii*; in the northern European Stag (*C. Elaphus*), and a very nearly allied, but larger, fossil congener, the basal tines are even commonly as much separated as in fig. 11, though typically approximated as in the Wapiti; fig. 12, an abnormal antler of *C. Elaphus*, wants the second basal tine, which, however, is not unusual in young animals of this species, and presents a strangely ramifying crown; the specimen is in the British Museum.



Proceedings of the Asiatic Society.

(Wednesday Evening, 1st September, 1841.)

The Honorable Sir E. RYAN, in the Chair.

HENRY WALKER, Esq. Bengal Medical Service, and FLETCHER HAYS, Esq. 62nd Regt. N. I., Assistant Governor General's Agent, Saugor, proposed at the last Meeting, were ballotted for, and duly elected, to whom the necessary communications of their election and rules of the Society for guidance, were ordered to be forwarded.

The following gentlemen were proposed as Members, viz :—

The Honorable A. AMOS, Esq. by the Honorable President, seconded by the Honorable H. T. PRINSEP, Esq.

ROBERT BARLOW, Esq. C. S. by the Honorable H. T. PRINSEP, Esq. seconded by the Honorable President.

C. G. MANSEL, Esq. C. S. by the Honorable President, seconded by the Secretary.

Library and Museum.

Books received for the Library of the Asiatic Society, for the Meeting on the 1st September, 1841.

Illustrations of the Literature and Religion of the Budhists, by H. B. Hodgson, Esq. Serampore, 1841, 1 vol.

Discourse touching the Spanish Monarchy, London, 1654, 8vo. 1 vol.

Calcutta Christian Observer, September 1841, New Series, vol. 2d, No. 21, pamph.

Annals and Magazine of Natural History, May 1841, No. 43, London, ditto.

Calcutta Monthly Journal, July 1811, ditto.

Report on the Statistics of Western Australia, in 1840, Perth, Western Australia, 1841, ditto.

Oriental Christian Spectator, July 1841, Bombay, vol. 2d, No. 7, ditto.

Hammer Purgstall's Falkner Klee Wien, 1840, 1 vol.

Read the following report of the Officiating Curator for the month of August last :—

H. TORRENS, Esq.

Secretary, Asiatic Society.

SIR,—For the month of August I regret to say that illness and debility, during ten or twelve days, have prevented my doing much that I had in view previous to the arrival of Mr. Blyth, who may now be daily expected.

Geological, Mineralogical, and Paleontological Departments.—We have received here from Government several limestones from Cachar, with other specimens, collected by Lieut. BIGGE, Assistant to the Agent to the Governor General on the N. E. Frontier, with their analysis as limestones by Captain TREMENEERE. I find, however, that they are of much higher interest than as mere limestones ; for three if not four out of eight contain organic remains ! I have not been able to identify the localities, which I believe to be farther to the Northward and Eastward than Dr. M'CLELLAND's valuable discoveries in that quarter, being from Cachar, (the Mukir range,) but the fact is important, is only as corroborating or connecting other discoveries.

We have also from Government a continuation of the collections made by Dr. WALKER in the Chinnoor Sircar, Nizam's territory : consisting of shale, coal, argillaceous limestone, sandstone, anthracite, &c. &c ; with a map of the Godavery from Chanda to below Mungapett, shewing the site of the coal, &c. &c. I have, I fear,

omitted to mention, in the July Report, the presentation of a copy of Mr. TASSIN'S large map of Bengal, by Government.

The printers are, I grieve to say, as dilatory as ever. I have only been able to obtain one proof, a day or two ago, for the whole month.

Osteological.—The skeleton of one of the samurs is in preparation.

Ornithological and Mammalogical.—Nothing new to report.

Botanical.—I have the pleasure to add here to my former report on our Lichens, that we have obtained a second, purple colour from the Society's Himalaya specimens; being No. 9, marked in my paper as an "orange crimson." I look with confidence to a third, if not a fourth, which, out of 19 sorts, will be a rich harvest. It appears that some months are required for the change from crimson to purple, as in the preparation of archil and cudbear in Europe.

We are also in this department indebted to Government for a valuable collection of gums, hemp, wax, silk, &c., from the Nizam's territories. I have handed to our Secretary a note on some articles sent on requisition by him, from Khorasan, (*via* Sinde,) by Lieut. POSTANS, amongst which are a new yellow dye, a new species of gall nut, and a very valuable sort of cotton, (the Nurma cotton,) which I have since found is highly prized in Malwa, where it is known by the same name. It is hoped this will prove of importance in the hands of Captain BAYLES and the American experimentalists. That no time may be lost, a memorandum has been transmitted to Government on this subject.

Museum of Economic Geology.—We have at length obtained all the new cases from our contractors. The original collection sent out by the Court of Directors is arranged; and I have added, from our own neglected stores, a valuable series of silver ores from Peru, and the remains of Captain FRANKLIN'S iron ores from Bundelcund, with specimens of gold, tin, copper, manganese, lead, &c. which can be fully spared; and are, in fact, utterly useless and lost as now lying dispersed, while here they form objects of both interest and utility, as being specimens of, or incitements to search for, our Indian resources, placed where they can be properly exhibited and studied.

The Donations to the Museum have been as follow:—

Scul and horns (imperfect) of Cervus Muntjack, } (Barking Deer,) from the Tipperah Hills, }	W. A. Peacock, Esq.
The <i>Choudonah</i> Parrot, (<i>Psittacus</i>),	Mr. L. Swaries.
A collection of Rocks and Minerals from Arracan, } to accompany a paper presented at the last } Meeting,	Js. Hyland, Esq.
Rocks and Minerals, from Cachar and the Naga } territory,	Lt. Bigge, Asst. Agent G. G. N. E. Frontier.
Rocks and Minerals, collected by Dr. Walker, Ni- } zam's territory,	Government.
A collection of Gums, Hemp, Wax, Silk, &c. from } the Nizam's territory,	Government.
Mr. Tassin's large Map of Bengal, &c.,	Government.

I am, Sir,

Yours very obediently,

H. PIDDINGTON.

Museum, 1st September, 1841.

Read report on some Articles of Trade sent from Khorasan by Lieut. POSTANS, and a memorandum on Nurma Cotton, by the Officiating Curator. [Inserted in the present number.]

Read the following letter of 31st August last from the Officiating Curator, reporting result of his examination of Lieut. BIGGE's specimens.

H. TORRENS, ESQ.

Secretary, Asiatic Society.

SIR,—Upon examining Lieut. BIGGE's specimens, which illness had prevented my doing earlier, I find three out of four of his limestones contain organic remains, and these I should say marine!

This is of very great importance as a geological fact, as it carries Dr. M'CLELLAND's discoveries much farther to the Eastward. At all events, a quantity of these specimens would be most highly desirable, both for the Museum, and for the Museum of the Honorable the Court of Directors, say three or four maunds weight of as many sorts of them as can be procured, so as to enable European geologists to compare with their collections.

You can then, doubtless, recommend this to the attention of Government, and through that channel he will probably pay more attention to the recommendation than if simply from the Society, which I fear is not in the best credit with collectors, of late years.

Yours very faithfully,

31st August, 1841.

H. PIDDINGTON.

P.S.—These are the specimens sent us from the Government Secretariat, with Captain TREMENHEERE's analysis, who seems quite to have overlooked the locality, for he notices them only as limestones!

Read letter, No. 1274, of 12th August last, from Mr. Secretary BUSHBY, forwarding 30 copies of the Cochinchinese Dictionary and Vocabulary for distribution.

Resolved—That 25 copies of the Dictionary be forwarded to Messrs. W. H. ALLEN and Co. of London, with instructions to distribute them to the learned Societies and individuals in Europe, agreeably to the wish of the Government, and that five copies be retained for the use of the Library of the Society.

Read a letter, No. 792, of the 25th August last, from Mr. Secretary BUSHBY, intimating the authority to the Coal Committee to make over a package received from the Court of Directors, containing specimens of copper ore, exhibiting the various stages of its reduction, for deposit in the Museum of Economic Geology.

Several specimens of snakes, minerals, &c. were presented by Lieut. M. KITTOE, accompanied with the following letter from that Officer:—

TO H. TORRENS, ESQ.

Secretary to the Asiatic Society of Bengal.

MY DEAR TORRENS,—I had hoped to have been able to have attended the Society's meeting this evening, and have presented the few specimens of snakes and minerals,

&c. as per annexed memo. which I now send, but a relapse of fever prevents me. I regret that I should not have been able to have brought a finer and more extensive collection, but there are reasons for it, which the least mentioned the better.

I would beg to invite the attention of any member versed in mineralogy to the minerals; they belong to the iron formation of the Keunjhur Mountains, and appear uncommon.

The fish is, I fancy, a nondescript species of carp, it is a stone-sucker like the loach, and has like feeders or appendages to the mouth; it is like the "kalahanse," which is also a stone-sucker, but it differs in size, colour, and the shape of the mouth in particular; it is sometimes caught as high as $2\frac{1}{2}$ to 3 seers in weight. The specimen from which the drawing was taken was about $1\frac{1}{2}$ seer or more. I have never seen this in any other river but the Brahmen's, which abounds in fish, and this is the second nondescript fish I have found in that river.

The squirrel is quite destroyed; it has lost three inches of its tail, which quantum was of a pale slate colour. I believe the animal to be full grown, as there is a considerable variety of the tribe in the Keunjhur Mountains; perhaps this specimen is sufficiently perfect to admit of being properly described by CANTOR or M'CLELLAND, to whom it is my wish that all the specimens be sent, for examination and nomenclature. The snakes must go to CANTOR. There are several which are well known. I brought them merely to increase the stock, to enable the Society to furnish duplicates to other Museums. The birds' eggs are damaged; they will do in the room of better specimens.

The book I send, I consider to be a curiosity.

Yours sincerely,

CALCUTTA, 1st September, 1841.

M. KITTOE.

Minerals.

Three specimens from the iron formation of the Keunjhur Mountains.

Two Ditto of serpentine and one green quartz (?) from Juspoor.

Ditto of an elegant squirrel, Keunjhur hills.

Ditto 6 snakes, and a kind of scorpion, also lizard, Keunjhur and Mohurbhunj jungles.

Ditto broken, and of a hawk, called in Hindoostan "Luzzur."

An unfinished drawing of a fish caught in the Brahmen's river, believed to be a nondescript.

An ancient work in one volume, with manuscript marginal notes, entitled "A Discourse touching the Spanish Monarchy," translated from the Latin edition by CAMPANELLA, a Spanish monk, in the 16th century, printed in 1654.

A war-cap adorned with human hair, and a crest of the tail hair of the elephant, worn by the chiefs of the Naga tribes, together with some Naga spears and swords, were presented by Mr. MILNE, late in the employ of the Assam Tea Company.

The Secretary noticed the safe arrival of the taxidermist, who had been sent to Chyhassa, and placed under Lieut. S. TICKELL, in pursuance of the plans the Society have in view, of placing taxidermists throughout the country, for the preparation of objects collected by Members, who take an interest in the subject.

For the presentations and contributions, the thanks of the Society were accorded.

At a Special Meeting held, on the 24th September 1841, of the Committee of Papers—

The Hon'ble Sir E. RYAN, in the Chair.

Read letter from Mr. H. PIDDINGTON of 9th September 1841, reporting that on the 6th idem he had delivered over charge of his departments of the Museum of the Asiatic Society to Mr. E. BLYTH.

Read the following correspondence with that gentleman :—

TO EDWARD BLYTH, ESQ.

SIR,—As you have now taken charge of the Museum of the Asiatic Society of Bengal, in your quality of Curator of that Museum, I am directed by the Honorable the President to address you, for the purpose of pointing out those particular points to which the Society would wish you to give your first and most earnest attention.

2. The Hon. the President in writing to Professor WILSON regarding the qualifications of a Curator for the Society, (a reference which resulted in procuring for the Society the advantage of your service,) made use of the following terms, in specifying what was required.

“We think the office should be filled by a person who can give to the Museum his principal attention, and be in attendance from 11 to 4 P. M. The Salary is 250 Rs. a month. As to duties, we require monthly reports on the state of the Museum. We do not allow specimens to be removed from the Museum. Our Museum has, in fact, two departments. The Oriental Antiquities, Numismatics, &c. &c. we must leave to our Oriental Secretary,—but as to every thing connected with Natural History in our Museum, we look to our Curator,—all this is specified in a paper in our Journal, or rather in the minutes of the Proceedings of the Society for December 1839, when the question was fully considered.”

3. The Hon. the President has desired me to enter the above at length for convenience of reference, although well aware that you must, in all probability, have already perused the passage in the original letter to Professor WILSON, before completing your arrangement with the Professor on the part of the Society.

4. The paper referred to, as containing a detailed statement of the Curator's duties, you have doubtless also seen. I append it (as published in No. 96, Asiatic Society's Journal, December 1839, p. 1060.), for readier reference.

5. “The first object of the Society,”—it is there stated—“in remodelling its Museum, should be to form a grand collection of minerals and fossils, illustrative of the Geology, Geography, and Palæontology of our British Indian possessions.”—This great object it is the anxious and earnest desire of the Society to see carried out; and with the Museum of Economic Geology now added to our own, and the very large, but still much disordered collections belonging to the Society, it is believed that opportunities exist of forming the basis, at any rate, of a great Mineralogical and Geological Collection, useful in every and all respects to the scientific Student, the Miner, or the Agriculturist.

6. The Hon. the President is most anxious to know, what course you propose to adopt in carrying out the design of the Society. The late officiating Curator, during the short period of his holding the office, has, as you will observe, done much towards the

classification of many of the superb collections belonging to the Society. His patience and energy have led to the recovery of many specimens supposed to have been lost, and to the restoration of more than one collection, such as Dr. GERARD's, from the Himalaya, unique in rarity and value.

7. The Hon. the President does not doubt but that your ability and scientific knowledge will be steadily directed towards carrying out the general objects of the Society, but being specially interested, as in possession of the wishes of that body, upon the important question above noted, and being led to believe moreover that a different branch of science is that to which you are from habit and inclination most ready to devote your principal attention, he has directed me to request that you will oblige him by stating how far you consider yourself qualified to undertake the main duties of the Curatorship, (as stated in the accompanying paper,) including the charge, conduct, and advancement of the formation of the Museum of Economic Geology.

8. I am desired to observe, that the Society of which you are Curator, has always in view the interests, in the first instance, of India, as respects the elucidation of her natural phænomena, the development of her resources, and the advancement of knowledge in all branches of science whereby this country may be benefited. The Society works therefore for itself, and not subordinately to any other body whatsoever. The first fruits of all labour by its Members, or its Office-bearers are due to it; the subsequent results are of course available for general uses.

9. I am directed to request that you will favor the Hon. the President with a reply at your early convenience, and have the honor to be,

Your obedient servant,

H. TORRENS,

Secretary, Asiatic Society of Bengal.

TO THE SECRETARY OF THE ASIATIC SOCIETY.

SIR,—I beg to acknowledge the receipt of your communication, detailing the objects which it is the desire of the Asiatic Society should more prominently engage my attention, in endeavouring to fulfil the duties of Curator to their Museum; and I fully trust that, with the great facilities afforded me in maturing what acquaintance I already possess relative to the multitudinous and highly diversified objects of investigation committed to my charge, I shall, in reasonable time, be able to afford entire satisfaction to the Society, by carrying out their wishes in every department, which falls within the scope of my duties to investigate.

When, however, it is remembered that these duties comprise various departments of the general subject of Natural History, to which in Europe the principle of division of labour is applied, and that it is rare to find an individual minutely conversant with the details of two or more of these departments, to the extent which I consider necessary to enable me to discharge efficiently what is generally expected from an individual filling the office of Curator to a Museum, I think I may crave some indulgence on the part of the Society, if I do not, at the very first, prove alike proficient in every one of these several departments, confidently appealing to the experience of any practical naturalist, for an acknowledgment of the reasonableness of the plea which I have here ventured to offer.

It is in the Mineral Department, unfortunately, that I am at present less qualified, by previous study, to devote my immediate and first labours advantageously for the

Society; but with the opportunities for study which are now before me, and with the liberal encouragement and support I may reckon upon receiving, I do not fear but that I shall soon render myself competent to discharge that portion of my duty which relates to the efficient management of the Museum of Œconomic Geology; this being a subject in which I feel the liveliest interest, and with the high importance of which I am deeply and thoroughly impressed.

In all that relates to the determination of organic forms, recent or fossil, I hope to be already able to meet the wishes of the Society, having heretofore more particularly devoted myself to this exceedingly comprehensive branch of study, which has found me very ample employment in attaining to what information on the subject I at present possess.

With great respect,

*Asiatic Society's Rooms,
Calcutta, 22nd September, 1841.*

I am, Sir,

Your obedient servant,

EDWARD BLYTH.

Resolved, with special reference to the letter from Mr. E. BLYTH, that he be put in charge of the office of Curator, upon the understanding that the appointment will be made permanent, if at the end of twelve months he has qualified himself for carrying out the intentions of the Society respecting their Museum, as set forth in the Proceedings of the Society, recorded in the December No. (96) of the Asiatic Society's Journal, 1839.

Ordered,—That a copy of the foregoing resolution be communicated to Mr. E. BLYTH.



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PLATE I.

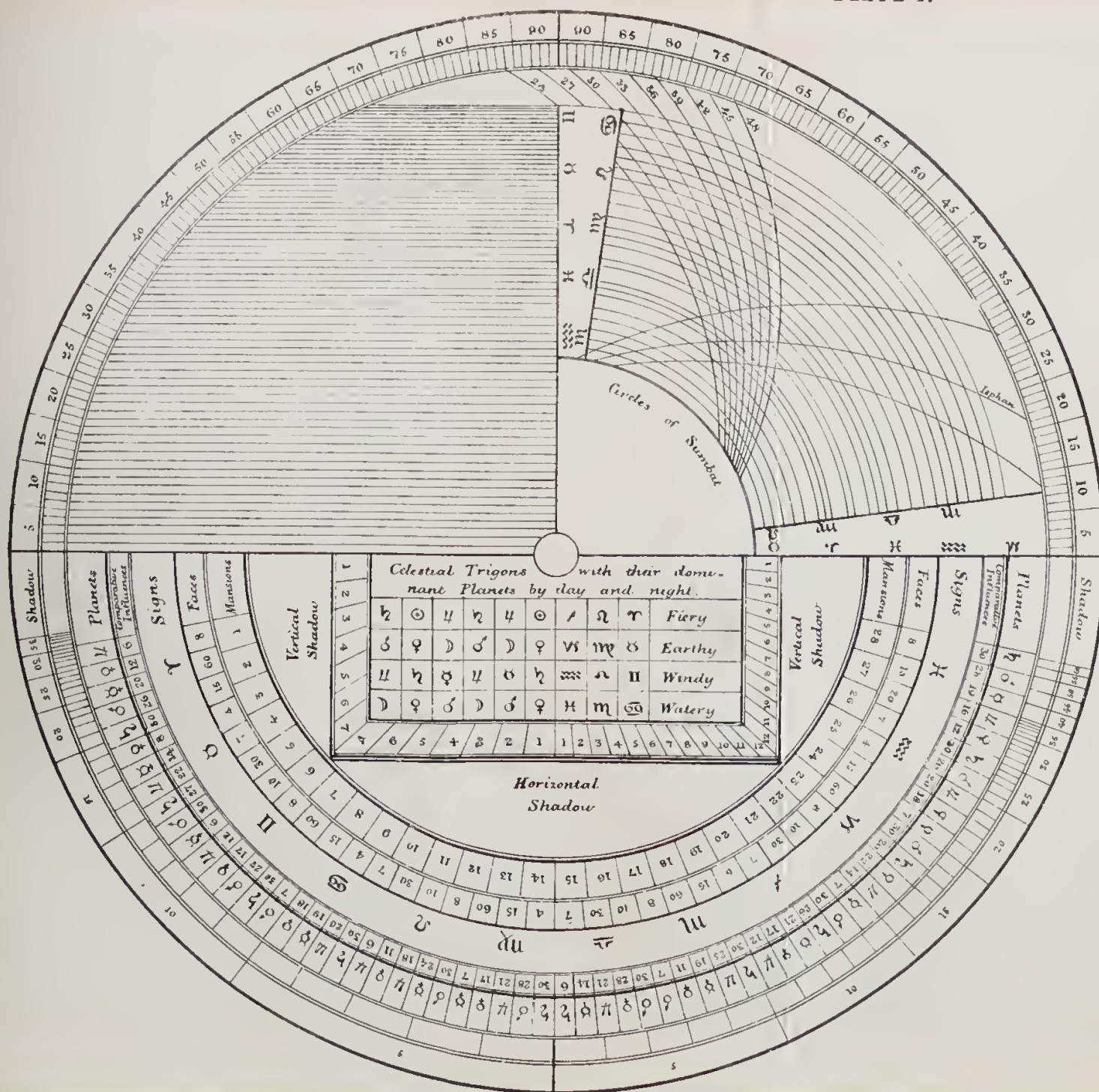




PLATE II

